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Maryland Agricultural College Bulletin

OCTOBER-DECEMBER, 1905

Vol. 2 No. 2

THE MARYLAND AGRICULTURAL COLLEGE

COLLEGE PARK, MARYLAND

ISSUED QUARTERLY

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INTRODUCTION.

MARYLAND AGRICULTURAL COLLEGE, *November*, 1905.

In presenting you the following bulletin, I wish to call your attention to the importance of the principles there outlined. As a practical dairyman, have you not found your actual experience verified by Mr. Porter's statement of facts?

Again, if you are not a dairyman, by vocation, but simply the owner of one cow for your family, is it not worth your while to know enough about the selection of a cow to make it certain when the selection is made that you have secured an animal which will give you profitable returns for your investment? Again, the cow, no matter how perfect a type she may be for milk production, cannot do her work unless she is provided with the raw material from which milk and butter can be profitably made. A good cow poorly fed, or a poor cow well fed, represent investments which produce no income.

The same may be said of every branch of the Live Stock industry on the farm. We need much more knowledge concerning the scientific principles which must direct in all of our operations on the farm, if we are to receive any returns commensurate with the efforts which we make in our daily work on the farm.

In this bulletin, you will find an outline of the Short Winter Course of 10 weeks, for men who cannot spare the time for a longer course. Study it carefully. It means much to you and your son. In the hours given to this work, a man who will devote himself as he should to the course he wishes to pursue, bearing in mind that he should not undertake too much, will, at the end of ten weeks, find himself in possession of an equipment of training which will be of great service to him in his practical operations on the farm. Send for a catalog containing full particulars.

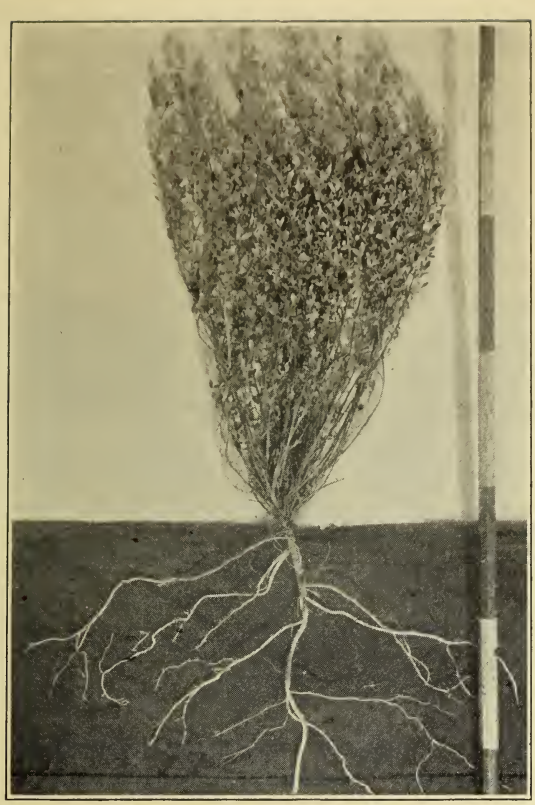
The terms for the ten weeks course are $4.00 per week, payable in two installments. The first payment of $20 on entrance, and

the second payment on February 1, 1906. It is desired to make this Short Winter Course a feature of College work. For earnest men, it will afford an opportunity, which, to be appreciated, must be taken. If you, as the head of the home, cannot come, send your son, for the experience will be valuable to him. We want your College to serve you. You must accept the service, for we cannot enforce it if we would, and we would not if we could.

It will afford us pleasure to open correspondence with you bearing upon the work in this department of our Institution.

Fraternally,

R. W. Silvester, *President.*



AN ALFALFA PLANT.

SHORT WINTER COURSE IN AGRICULTURE.

This course will begin on Wednesday, January 10, 1906, and continue ten weeks, to March 27th. It will be open to young men of sixteen years of age and over. The aim of the course will be to give the largest possible amount of information on strictly agricultural topics, by means of lectures, laboratory instruction and practical work in the field, orchard, green-house, stables, creamery, and carpenter and blacksmith shops. It is not a text book course but the students will have the privilege of using the Department

Libraries, and will be encouraged to put in as much of their spare time as possible in reading on subjects connected with their work.

Every student will be required to take not less than two hundred and fifty hours of work. Two hundred of these must be devoted to the following specified studies:

Soils, 22 hours.
Manures, 20 hours.
Agricultural Chemistry, 20 hours.
Stock Feeding, 15 hours.
Farm Dairying, 40 hours.
Plant Production, 25 hours.
Farm Live Stock, 18 hours.
Horticulture, 40 hours.

The other fifty hours will be devoted to such topics as the student may elect, after consulting the synopsis of the course as outlined in the following pages:

Terms.

Tuition and room free. Table board will be furnished by the College, at four dollars per week. Students will be expected to furnish their own bedclothes, pillows, towels and napkins and overalls for dairy work. *Short course students are not required to drill or wear uniforms.*

SYNOPSIS OF COURSE.

I.—Soils.—Twenty-two Hours.

Prof. W. T. L. Taliaferro.

The examination and classification of soils; the relation of soils to water, air, heat; adaptation of soils to crops; improvement of physical condition of soils; drainage, ventilation, cultivation, green manures, cover crops, rotation of crops.

II.—Manures.—Twenty Hours.

Dr. H. B. McDonnell.

The best methods of preserving and applying farm manure. The relative value of the different manures and fertilizers. The maintenance of soil fertility. The place of lime in the farm economy.

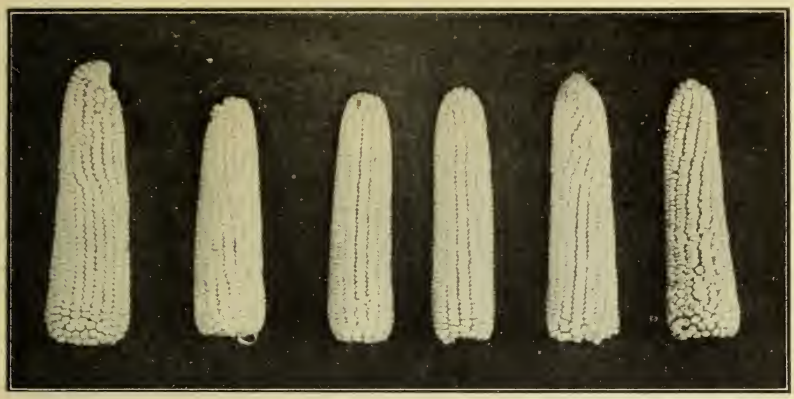
III.—Agricultural Chemistry.—Twenty Hours.

Dr. H. B. McDonnell and Mr. Morgan.

Soils; their formation, classification and properties. The mineral constituents of soils and their bearing on plant growth. The best means of supplementing them when needed for plant growth.

IV.—Plant Production.—Twenty-five Hours.

Prof. W. T. L. Taliaferro.



TYPES OF CORN EARS.

Varieties, improvement, soil requirements, cultivation, planting and harvesting of field crops, including corn, small grains, legumes, grass, silage and soiling crops, potatoes and root crops.

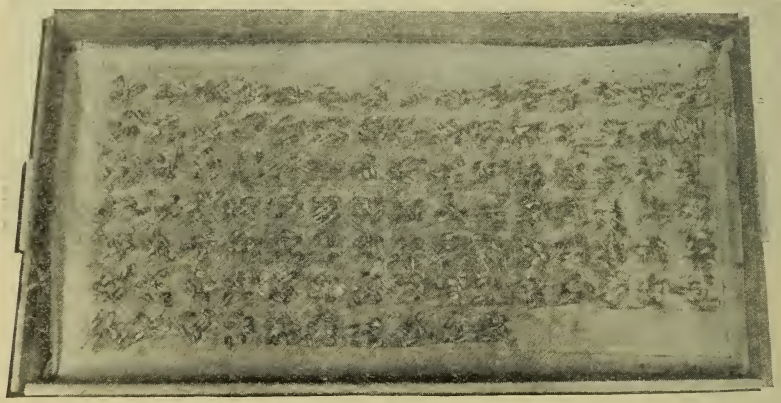
Special attention is given to the growing of alfalfa, cow-peas, and other legumes, and their place in farm economy.

Last spring more than two thousand persons attended the lectures in the Corn Special Trains, run by the Maryland Agricultural Experiment Station, on the Maryland & Pennsylvania, and the Western Maryland Railroads. Very many of these have reported great improvement in their corn crop from putting into practice the lessons of seed-testing taught. Students in this course will be made thoroughly familiar by actual practice with the methods of making germination tests and of selecting seed. They will also be given full

instruction in the principles and practice of breeding corn for improvement in yield and feeding value.

The results which have already been attained in the improvement of corn by systematic selection and breeding are among the most wonderful, as well as most useful, achievements of modern agricultural science. Corn is already the most valuable crop grown in Maryland, its annual value being about seven million dollars. Large as is this sum, there is no doubt that it would be doubled by a general practice among farmers of correct principles of selecting seed and growing the crop.

This is a valuable and thoroughly practical course, and should not be missed by any young man who is engaged, or expects to be engaged, in farming in Maryland.



A SEED CORN GERMINATION TEST.

The covering material has been removed leaving the grains undisturbed in the box. The white roots and sprouts of the germinated grains are seen.

V.—Stock Feeding.—Fifteen Hours.

PROF. H. J. PATTERSON.

The composition and digestibility of the different feeding stuffs, what is meant by a well-balanced ration, and the calculation of such rations with given materials, feeding for maintenance, fat, butter, eggs, wool, milk; the effect of food on quality; the preservation and preparation of coarse fodders; ensilage; steaming and cooking food.

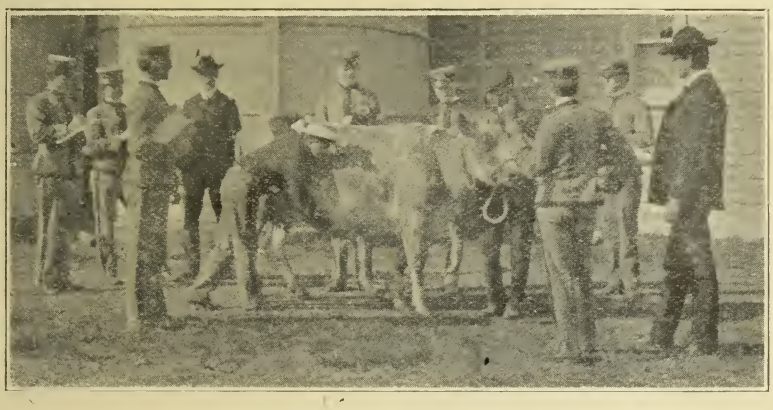
etc., etc. Not only will the theory be studied, but a careful carrying out of the theory in practice will be the features of the course.

VI.—Farm Live Stock.—Eighteen Hours.

MR. B. E. PORTER.

Principal breeds of horses, cattle, sheep and hogs; their uses and adaptation; principles and practice of stock breeding; stock judging.

This section includes a thorough course in the judging of farm live stock, especially dairy and beef cattle. The student is taught by actual handling of the stock and the use of the score card, to correctly select animals for different purposes and to accurately gauge their value for their special purpose.



A CLASS IN STOCK-JUDGING.

VII.—Dairying—Forty Hours.

MR. B. E. PORTER.

The dairy instruction will consist of lectures on bacteriology, and the necessary precautions to insure a good product; lectures on the obtaining of cream from the milk, comparing the old gravity process and the use of separators; on milk testing with the Babcock

test, and the place of the test in modern dairying, and on butter making with the use of the acid test, which practically insures the making of good butter. The lectures on milk testing and butter making will be supplemented by practical instruction, and each student will be required to handle the Babcock test as well as the separator and the churn.

VIII.—Horticulture.—Forty Hours.

PROF. W. N. HUTT.

A discussion of the fundamental principles of fruit and vegetable growing, orchard cultivation, fertilization, pruning, grafting, packing and marketing of fruits. The construction and management of hotbeds, cold frames and the propagation of plants. These lectures will be supplemented by practical work in green houses and orchards.

IX.—Veterinary Science.—Forty Hours.

S. S. BUCKLEY, D. V. S.

An elementary study of the diseases of live stock should be made by every one having charge of domesticated animals. Frequently farm animals become a source of considerable loss through neglect or unintelligent management, when out of condition.

While the treatment of sick animals should rest with veterinarians, trained in such work, yet the owner or manager must know when such services are needed and how to carry on such treatment intelligently, when directed by the veterinarian. The effort is made in the following course of lectures to prepare the student with such knowledge, and to enable him the better to understand the bulletins, reports and treatises upon veterinary subjects, which he may possess:

1. Nutrition.
2. Diseases due to Mistakes in Feeding.
3. Infectious Diseases.
4. Cattle and their Common Diseases.
5. The examination of a Horse for Soundness.

6. Lameness.
7. The Foot—Its Care and Shoeing.
8. Bandages and Dressings.
9. The use of Medicines and Minor Operations.

X.—Tobacco.—Five Hours.

PROF. H. J. PATTERSON.

The plant bed, culture, harvesting, curing, marketing, and effects of fertilizing elements upon the quality.

XI.—Plant Physiology and Pathology.—Fifteen Hours.

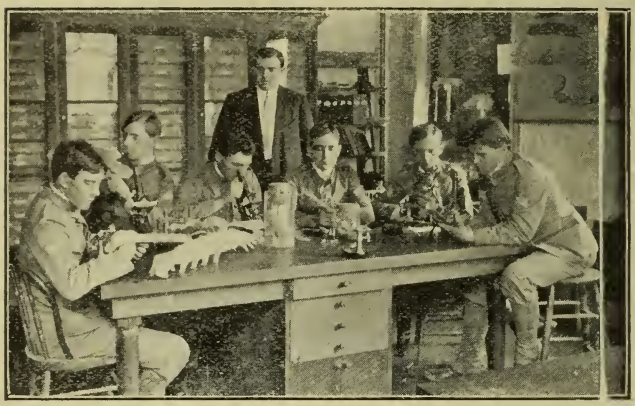
PROF. J. B. S. NORTON.

Five lectures on the general principles of plant life and structure; how plants live, grow and reproduce, and how they are influenced by different conditions of light, temperature, moisture and other factors in their surroundings; considered with special reference to agricultural problems. Five lectures on the causes, symptoms and treatment of plant diseases, with practice work in examination, and study of diseased plants, and the preparation and use of remedies and preventatives.

This course will include the discussion of the laws of plant life, the uses and structure of plant parts, nutrition, growth, formation of products by the plant, reproduction by seeds and otherwise, seed testing, useful plants, weeds, poisonous plants, geographical distribution, variation, acclimatization, cause of diseases, parasitic fungi, preparation of fungicides and spraying.

XII,—Economic Entomology.—Twenty Hours.

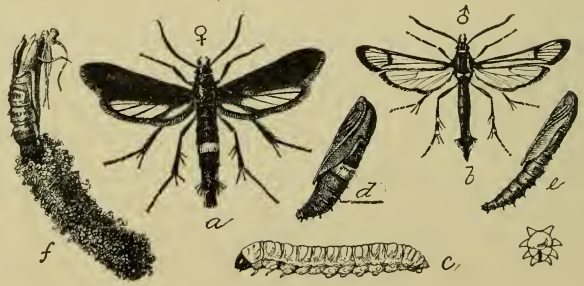
PROF. THOS. B. SYMONS.



A CLASS IN ENTOMOLOGY.

These lectures will treat of the characters of insects in their relation to the methods of combating them, together with concise considerations of the life history and habits of some of the more important insects with which the farmer and fruit grower have to deal.

Attention will also be given to the making and application of insecticides.



The Peach Tree Borer. a, adult female; b, adult male; c, full grown larva; d, female pupa; e, male pupa; f, pupa skin extended partially from cocoon; all natural size (after Marlatt, Cir. No. 17, S. S. Div. Ent. U. S. Dept. Agri.).

XIII.—Carpentry and Blacksmithing.—Fifty-five Hours.

Prof. J. C. Blandford.

A knowledge of this is very important to the agriculturist of this day. The equipment for this instruction is complete. The industrious, eager seeker after knowledge will accomplish much in the line of this work in the time allotted.

1. Sharpening of tools.
2. Adjustment of tools.
3. Sawing, Planing, Chiseling and Boring.

Practical Lessons in Blacksmithing.—Mechanism of, and care of forge and smith's tools. Preparation of forge for fire. Building and managing the fire and fluxes. Forging, bending, welding.

XIV.—Farm Accounts.—Twelve Hours.

Prof. H. T. Harrison.

A simple, concise and accurate method of keeping farm accounts. Business methods are as necessary to the successful farmer as to the merchant. Neither can do without a practical knowledge of book-keeping.

XV.—Road Construction and Leveling.—Five Hours.

Prof. Henry Lanahan.

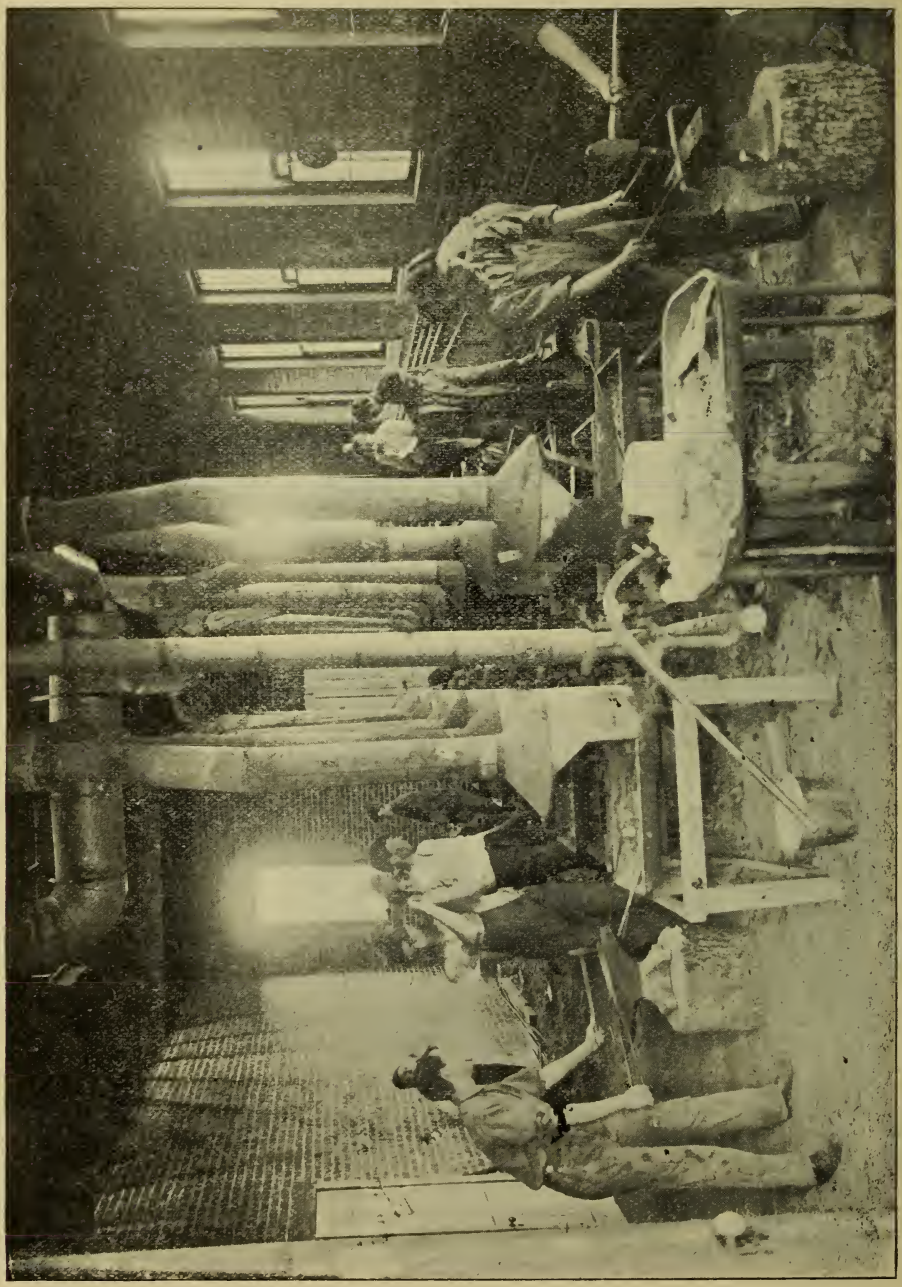
A brief treatment of the principles involved, and the methods used in the location, construction and maintenance of country roads.

An opportunity will be given those desiring it to learn the use of the level in laying out drains, etc. Students wishing to take the work in leveling must report to the instructor in charge within two weeks after the opening of the term.

XVI.—Civil Government.—Ten Hours.

Prof. F. B. Bomberger.

The general principles of government; the rights and duties of citizens, and an inquiry into the political institutions of Maryland.



IN THE FORGE SHOP.

THE SELECTION OF DAIRY CATTLE.

B. E. Porter.

Few things contribute more to a dairy farmer's success than skill in selecting and breeding his dairy stock. Some men possess this skill in a high degree intuitively; others acquire it by careful observation and long continued experience; others, again, never can or do obtain it. But, however it may come into a man's possession, it is no mean element in his success. Any one who has fed and milked a number of dairy cows can tell you which one in his herd is the best milker, but very often, however, when this same man wishes to replenish his herd with other cows like his best one, he experiences difficulty in selecting them. Some dairymen can do it, no doubt, but many others are at a loss because they are not acquainted with the correlation which exists between form and function. Too little attention has been paid to the relations existing between external form of the animal and its internal and more obscure characteristics, upon which its value in a great measure depends.

Every part of the external conformation should be associated in the mind with the correlated peculiarities of structure that give the greatest value to the animal for some particular purpose

The bull-dog, because of his great strength of jaw and thick muscular neck, is enabled to meet and dispatch animals which are fierce and savage, while the greyhound, on account of his slight rangy form attacks only those animals which show little or no fight, and furthermore is enabled to capture prey which is too swift and fleet for the bull-dog.

The draft horse pulls heavy loads, the roadster travels many miles in a short time, the beef animal produces a large quantity of choice meat and the dairy cow produces a large quantity of milk, because each has a specialized structure of form.

When selecting dairy cows, utility is the primary object. With this in mind, men who have made a thorough study of the dairy

animal are now willing to acknowledge and recognize that she is possessed of a type peculiar to herself. This type, for maximum utility is not very beautiful. The dairy cow does not have the smooth, graceful, rounded form of her sister—the beef cow—but has sharp points about her structural anatomy which give her a lean and bony appearance. Yet, aside from this peculiarity of type, she should be stylish, active and attractive in appearance.

A good dairy cow should have the appearance of a cow and not that of the opposite sex; she should have a truly feminine look and a gentle, meek disposition. Preference should be given to cows with small bones, fine and slender limbs, and a tail which is fine at the base; a small but long head, broad between the eyes, but narrowing towards the horns; the horns themselves of a bright color, tapering finely and glistening; a supple and soft, unctuous skin, covered, even on the forehead, with a fine, glossy, soft hair; an eye which is clear, bright and prominent, though placid and mild, and a form which is wedge-shaped, set low to the ground and has a straight, strong top line.

Certain color markings may tickle the eye of the buyer and facilitate sales, but it cannot be said, nor is it true that a cow, because she is red, will give more milk and do better than one which is white, brindled or spotted.

Strictly speaking the cow is simply a machine for the conversion of crude food materials into milk for her young. The dairy-cow, likewise can be considered a machine with a strong overruling predisposition or tendency to turn the food which she consumes toward the production of milk with a high content of solids, especially butter fat, as against the tendency so often seen to turn food into flesh and fat. With this constitutional predisposition, she must have a large mouth, with a well set jaw and a large, spacious barrel, for unless she consumes large quantities of food, her owner cannot hope for large returns.

When selecting animals, especially for long service, like the dairy cow, it is very important that they should have abundant vital power, which is called "constitution." Constitution is best indicated by large spreading nostrils, a deep and long chest with a wide floor, strong abdominal walls and a full development of the

navel, showing that the animal when in a prenatal state was abundantly nourished by the mother, through a well developed umbilical cord.

The quality of the skin, hair and bones is in direct relation to the endurance of the cow. If the skin covering the external region is soft, fine and pliable, it indicates that the secretions are healthy, and it would seem natural that the lining of the stomach would be in the same state, and if such is the case, digestion goes on better, thus increasing endurance.

In the dairy cow, the udder is an important organ, for it directly performs the work of making milk, which is the dairy cow's specialty.

This organ should be as large and capacious as the anatomy of the cow will allow, but it should not be heavy and fleshy, yet should have some substance when empty. The udder should be covered with a loose, pliable skin and fine hair. Of course no one cares to milk a cow with short teats, or one with unduly large teats, necessitating the use of both hands to each teat.

Of all marks for ascertaining good cows, the best are afforded by the blood vessels. If the veins which surround the udder are large, widening and varicose, they show that the glands receive much blood, and consequently, that their functions are active and that the milk flow is abundant. The milk veins extending forward along the body from the udder, should be large, branching, and tortuous, and enter the body by many milk wells. The character of these veins, together with the escutcheon, shows the milk-producing capacity of the cow.

In conclusion it is well to remember that a good dairy cow should present a good appearance, be possessed of the proper conformation, have strong constitution, much quality and refinement, and show external evidences in the udder, escutcheon and milk veins, of a skilled workman and an excellent performer.

A GOOD TYPE.

A POOR TYPE.

THE SCORE CARD IN STOCK JUDGING.

Experience has demonstrated that there is no greater aid in the study of the relation between animal form and function, than a well balanced score card in which the points of an animal are taken up and considered one by one and each given its due weight in determining the animal's tendencies.

The professional stock judge uses no score card, it is true; nor, if he be an expert, does he need one. His trained perception takes in at a glance all the points of an animal from muzzle to tail, and his trained judgment almost instantly sums up the good and the bad and fixes the grade. With the average man, the case is different. His ideas of what constitute good and bad form are hazy and undetermined, because he depends too much on general appearance. Having never observed the close relationship which exists between form and product, whether that product be milk, flesh or energy his judgment of the value of a given animal is apt to be uncertain and lacking in discrimination.

At best he judges, by comparing with animals with which he is himself familiar, all of which may be very faulty. He has in mind no fixed type, no fixed standard of perfection by which to judge, and his judgment, therefore, lacks accuracy. For such an one, the score card will be found most helpful, in fact, indispensable. By its aid, the study of animals becomes a science based on cause and effect and from which "guessing" is eliminated.

At the Maryland Agricultural College great attention is paid to stock judging in all the ordinary branches of farm livestock. The sub-joined score card has been used by the students of the College for several years in judging dairy cows, and the results obtained have shown how valuable and practical an aid it is in this class of work.

This is not a breed score card but applies to dairy cattle of any breeding. It will be observed that the total value of the points on the card foot up to one hundred. This represents perfection, which is never found in fact, but should exist in the mind of every judge. A good cow, one that makes three hundred pounds of butter a year, should score about 85 points out of the hundred.

The score card is almost self-explanatory, but a few additional explanations may be helpful.

Weight in Pounds.—The weight of a good dairy cow may vary from 700 to 1200 pounds.

Size.—The cow to do her best should be fully developed and have reached maturity.

Style.—Style depends upon the nice adjustment of all the parts of the frame work.

Quality.—As shown by the character of the skin and hair is an index to the internal organization.

Temperament.—The cow should not be easily excited nor should she be sluggish in disposition.

Eye.—This organ can be relied upon as an index of the health and disposition.

Pelvic Arch.—It is through this arch that the calf is born, and therefore it should be large so that calf-birth will be easy.

Bones.—Refinement should be shown in the bone, but not so much as to give the appearance of weakness.

Chest.—A cow with a wide deep chest, with a large heart girth has, therefore, a large lung capacity for the purification of the blood.

False Ribs.—These, sometimes called floating rigs, are the ribs which are not attached to the sternum bone.

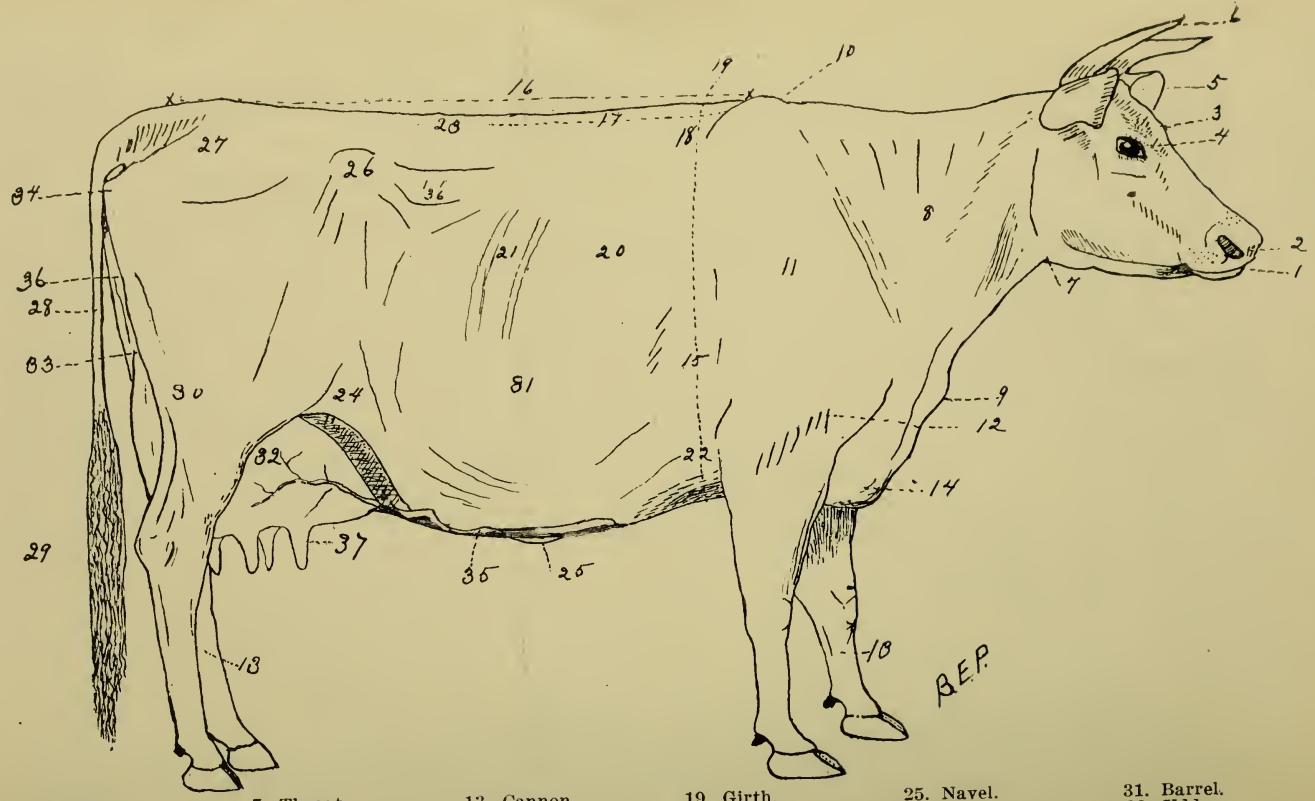
Escutcheon.—Viewing the thighs and the region of the cow above the udder, it will be noticed that on this part the hair runs in the opposite direction to that inclining on the other parts of the body. Where it does this, it is known as the escutcheon. It is supposed that the reason for this hair growing in the direction mentioned is due to the artery which passes this part.

Milk Veins.—When these organs are large and tortuous, they indicate a large amount of blood flowing through the udder, and blood is the material from which milk is made.

Skin.—If the secretions of the skin are plentiful and healthful, it may be expected that the secretions in the rest of the body are going on vigorously.

Twist.—The space behind, between the thighs. In the dairy type the twist is "open" or deeply hollowed out on account of the thighs being thin. In the beef type the twist is full, owing to the full development of the thighs, so that the tail hanging vertically often rests against that portion of the body.

SCORE CARD FOR DAIRY COWS—Scale of Points.	Perfect Score.	Stud't's Score.	Corrected.
I. Primary considerations—16 points.			
Weight in pounds, estimated....., corrected.....			
Size and substance for age.....	3		
Style, attractive, sprightly; breeding apparent.....	4		
Appearance, wedge-shaped viewed from front, side, rear and above; angular.....	4		
Quality: skin thin, loose, elastic, mellow; flesh firm; hair soft, fine and silky.....	5 — 16		
II. Nervous energy—23 points.			
Temperament, active, controlled.....	5		
Eyes, large, clear, bright, mild, placid, free from white.....	3		
Forehead, broad, high, face dished.....	3		
Ears, broad, thin, active.....	2		
Spinal column, long, prominent, open.....	4		
Milk veins, branching, long, tortuous.....	4		
Navel, large, defined.....	2 — 23		
III. Structural anatomy—18 points.			
Contour, clean-cut, smooth, correlated, symmetrical, free from patchiness and offal.....	2		
Head, medium in size; muzzle refined; mouth large; face lean and long.....	1		
Neck, fine, medium length, flat on side; throat clean; dewlap light.....	1		
Withers, narrow on top, spreading; shoulder light and slanting.	1		
Back, straight, strong, well muscled.....	2		
Loin, broad and strong.....	3		
Pelvic arch, prominent, bare; pin bones high, wide; hips wide, prominent.....	4		
Flank, high; twist open; thigh thin and incurved.....	2		
Bones, medium; joints fine, flat; horns small, waxy; tail long, slim.....	2 — 18		
IV. Digestion and assimilation—23 points.			
Nostrils, medium-size, clear and bright.....	1		
Breast and brisket, prominent, angular but not pointed.....	1		
Chest, wide, deep, long; heart girth large.....	6		
Barrel, medium long, broad on top, deep, capacious.....	9		
Ribs, flat, spaced, well sprung; chine open.....	3		
False ribs, suppressed; barrel depression marked.....	3 — 23		
V. Milk indications—20 points.			
Udder, long, capacious, balanced, well up behind, free from fleshiness but with some substance when empty, strongly attached; teats of good size and evenly placed.....	10		
Escutcheon, spreading over thighs, extending well upward.....	3		
Milk veins, large, tortuous, long and branched; milk wells large.	6		
Skin of ear and udder yellow; secretions yellow and plentiful....	1 — 20		
Total.....	100		
VI. Obvious and deductive defects.			
Per cent. of perfection.....			



1. Mouth.
2. Nostril.
3. Forehead.
4. Eye.
5. Ear.
6. Horn.
7. Throat.
8. Neck.
9. Dewlap.
10. Withers.
11. Shoulder.
12. Arm.
13. Cannon.
14. Brisket.
15. Chest.
16. Top Line.
17. Back, or Chine.
18. Crops.
19. Girth.
20. Ribs.
21. False ribs.
22. Fore flank.
23. Loin.
24. Hind flank.
25. Navel.
26. Hip.
27. Rump.
28. Tail.
29. Switch.
30. Thigh.
31. Barrel.
32. Udder.
33. Escuthcheon.
34. Pin bone.
35. Milk veins.
36. Twist.
37. Teat.

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UNIVERSITY OF ILLINOIS

PRESIDENT'S OFFICE

Maryland Agricultural College Bulletin

OCTOBER-DECEMBER, 1906

Vol. 3 No. 2

THE MARYLAND AGRICULTURAL COLLEGE

COLLEGE PARK, MARYLAND

ISSUED QUARTERLY

Entered at College Park, Md., as second-class matter under Act of Congress, July 16, 1894.

UNIVERSITY OF ILLINOIS

PRESIDENT'S OFFICE.

TO THE FARMERS OF MARYLAND:

Do you fully realize the power for your welfare which is resident in your State Agricultural College? Throughout the length and breadth of the United States there is evident an ever widening and increasing interest in the work of the Agricultural Colleges and Experiment Stations, and the Department of Agriculture at Washington.

These instrumentalities for improving Agricultural conditions in our native land promise a bright future for the profession of Agriculture. The policies of these institutions portend for the man on the farm a position in the body politic quite different from that which he has held for several generations past.

Traditional practices are to be replaced by scientific methods. The farmer must be trained for the successful prosecution of his work, just as is the doctor, lawyer, preacher, merchant or banker. The farmer who does not accept this axiom in modern life, and who, for himself and family, persists in following blindly traditions supported only by "main strength and awkwardness," will surely find himself well in the rear of the procession before the twentieth century is out of its childhood.

We are sending you our October-December Bulletin, giving an account of the Ten Weeks Course in Agriculture. We ask from you enough of your time to carefully peruse this Bulletin. It means much to your boy. Give him the opportunity of taking this course this season. If he is in earnest, he will be greatly benefited and will desire to continue the course for another season.

The practical nature of the work in this Short Course will be most evident to anyone who will take the time to carefully read this Bulletin.

The spirit of this age is to KNOW HOW TO DO SOME ONE THING WELL. Your boy should acquire this power. It will make for his success in life, when, without this training his life's work will certainly be a failure.

The product of a man's hands is an indication of his mental training. The head, hand and heart must be trained coordinately, if the highest type of manhood is to be attained. Your College would inculcate a zeal in the man for his tools, for his work, and for his convictions as to the reciprocal obligation of his Country to him and his obligations to his Country.

It is not more work that is required, but better directed work; a better understanding of the principles which underlie the vocation.

There is great dignity in work. It is indicative of a Nation's strength to see a strong, vigorous young man, with his arms bared to his elbows, working at the laboratory table, at the lathe, at the forge, in the greenhouse and in the fields, with an equipment of mental and physical training which bodies forth in concrete form, a finely conceived thought for the betterment of the world. This kind of labor is that which blesses him who gives and him who receives. It is this kind of labor which will constitute the material out of which future Epics will be made.

Every farmer in Maryland can contribute his share toward producing such an ideal condition in his native State. Will you and your family lend a helping hand?

Fraternally yours,

R. W. Silvester,
President Maryland Agricultural College.

President's Office,
November 7th, 1906.

SHORT WINTER COURSE IN AGRICULTURE.

This course will begin on Wednesday, January the 8th, 1907, and continue ten weeks, to March 19. It will be open to young men of sixteen years of age and over. The aim of the course will be to give the largest possible amount of information on strictly agricultural topics, by means of lectures, laboratory instruction and practical work in the field, orchard, greenhouse, stables, creamery and carpenter and blacksmith shops. It is not a text-book course, but the students will have the privilege of using the department libraries, and will be encouraged to put in as much of their spare time as possible in reading on subjects connected with their work.

Every student will be required to take not less than two hundred and fifty hours of work. Two hundred of these will be devoted to the following specified studies:

Soils 22 hours.	Farm Dairying, 20 hours.
Manures 20 hours.	Plant Production, 30 hours.
Agricultural Chemistry, 20 hours.	Farm Live Stock, 28 hours.
Stock Feeding, 20 hours.	Horticulture, 40 hours.

The other fifty hours will be devoted to such topics as the student may elect, after consulting the synopsis of the course as outlined in the following pages.

TERMS.

Tuition and room free. Table board will be furnished by the College at four dollars a week. Students will be expected to furnish their own bed clothes, pillows, towels, napkins and overalls for dairy work. *Short course students are not required to drill or wear uniforms.*

VIEW OF COLLEGE GROUNDS FROM THE NORTH.

SYNOPSIS OF COURSE.

1. SOILS--TWENTY-TWO HOURS.

PROF. W. T. L. TALIAFERRO.

The examination and classification of soils; the relation of soils to water, air, heat; adaptation of soils to crops; improvement of physical condition of soils; drainage, ventilation, cultivation, green manures, cover crops, rotation of crops.

II—PLANT PRODUCTION--THIRTY HOURS.

HARVEST TIME IN MARYLAND.

The corn crop of Maryland in 1905, as reported by the Bureau of Statistics, made an average yield of 36.9 bushels per acre, nearly three bushels per acre more than at any time within the past ten years. It is beyond question that this increase is due in a large measure to the practice of better methods in seed selection, due to the active campaign for good seed corn carried on in recent years by the Agricultural Colleges, Experiment Stations, Farmers' Institutes and other agencies for agricultural instruction. The good results of the work so far done is an earnest of what may be done when better methods become more general and should stimulate all to renewed activity in learning and spreading the gospel of good seed corn.

Students in this course will be made thoroughly familiar by actual practice with the improved methods of selecting and testing seed corn. They will also be given full instruction in the principles and practice of breeding corn for improvement in yield and feeding value and in the most approved methods of cultivating and fertilizing this important crop.

This is a valuable and thoroughly practical course and should not be missed by any energetic young man who is or expects to be engaged in farming.

III--AGRICULTURAL CHEMISTRY--TWENTY HOURS.

DR. H. B. MCDONNELL AND MR. MORGAN.

Soils; their formation, classification and properties. The mineral constituents of soils and their bearing on plant growth. The best means of supplementing them when needed for plant growth.

IV—MANURES--TWENTY HOURS.

DR. H. B. MCDONNELL.

The best methods of preserving and applying farm manure. The relative value of the different manures and fertilizers. The maintenance of soil fertility. The place of lime in the farm economy.

V--STOCK FEEDING--TWENTY HOURS.

MR. B. E. PORTER.

The work in Stock Feeding will cover the principles of animal nutrition, the composition of feeding stuffs, their combination into properly balanced rations and the relation between the sustenance of animals and their products. The subject will be considered under the following heads:

1. The chemical elements and compounds in feeds.
2. Function of the nutrients.
3. Digestion of food.
4. Cattle foods. Commercial feeding stuffs.
5. The selection and compounding of rations.
6. Feeding growing animals.
7. Feeding for the production of milk, meat, wool, eggs and energy, or work.

VI--FARM LIVE STOCK--TWENTY-EIGHT HOURS.

MR. B. E. PORTER.

Principal breeds of horses, cattle, sheep and hogs; their uses and adaptation; principles and practice of stock breeding; stock judging.

SOME SPECIMENS OF THE DAIRY HERD.

This section includes a thorough course in judging farm live stock, especially dairy and beef cattle. The student is taught by actual handling of the stock and the use of the score card to correctly select animals for different purposes and to accurately gauge their value for their special purpose.

VII--DAIRYING--TWENTY HOURS.

MR. B. E. PORTER.

The dairy instruction will consist of lectures on bacteriology and the necessary precautions to insure a good product; lectures on the obtaining of cream from the milk, comparing the old gravity process and the use of separators; on milk testing with the Babcock test, and the place of the test in modern dairying and on butter making, with the use of the acid test, which practically insures the making of good butter. The lectures on milk testing and butter making will be supplemented by practical instruction, and each student will be required to handle the Babcock test, as well as the separator and the churn.

VIII--HORTICULTURE--FORTY HOURS.

PROFESSOR OF HORTICULTURE.

STUDENTS MAKING GRAFTS.

A discussion of the fundamental principles of fruit and vegetable growing, orchard cultivation, fertilization, pruning, grafting, packing and marketing of fruits. The construction and management of hotbeds, cold-frames and the propagation of plants. These lectures will be supplemented by practical work in greenhouse and orchards.

IX--VETERINARY SCIENCE--FORTY HOURS.

DR. S. S. BUCKLEY.

An elementary study of the diseases of live stock should be made by everyone having charge of domesticated animals. Frequently farm animals become a source of considerable loss through neglect or unintelligent management when out of condition.

While the treatment of sick animals should rest with veterinarians trained in such work, yet the owner or manager must know when such services are needed and how to carry on such treatment intelligently when directed by the veterinarian. The effort is made in the following course of lectures to prepare the student with such knowledge and to enable him the better to understand the bulletins, reports and treatises upon veterinary subjects which he may possess:

1. Nutrition.
2. Diseases due to mistakes in feeding.
3. Infectious diseases.
4. Cattle and their common diseases.
5. The examination of a horse for soundness.
6. Lameness.
7. The foot—its care and shoeing.
8. The use of medicines and minor operations.

X--TOBACCO--FIVE HOURS.

PROF. H. J. PATTERSON.

The plant bed, culture, harvesting, curing, marketing and effects of fertilizing elements upon the quality.

XI--PLANT PHYSIOLOGY AND PATHOLOGY--FIFTEEN HOURS.

PROF J. B. S. NORTON.

STUDYING PLANT DISEASES.

Five lectures on the general principles of plant life and structure; how plants live, grow and reproduce, and how they are influenced by different conditions of light, temperature, moisture and other factors in their surroundings, considered with special reference to agricultural problems. Five lectures on the causes, symptoms and treatment of plant diseases, with practice work in examination and study of diseased plants and the preparation and use of remedies and preventatives.

This course will include the discussion of the laws of plant

life, the uses and structure of plant parts, nutrition, growth, formation of products by the plant, reproduction by seeds and otherwise, seed testing, useful plants, weeds, poisonous plants, causes of disease, parasitic fungi, preparation of fungicides and spraying.

XII—ECONOMIC ENTOMOLOGY—TWENTY HOURS.

PROF. T. B. SYMONS.

CLASS IN ENTOMOLOGY.

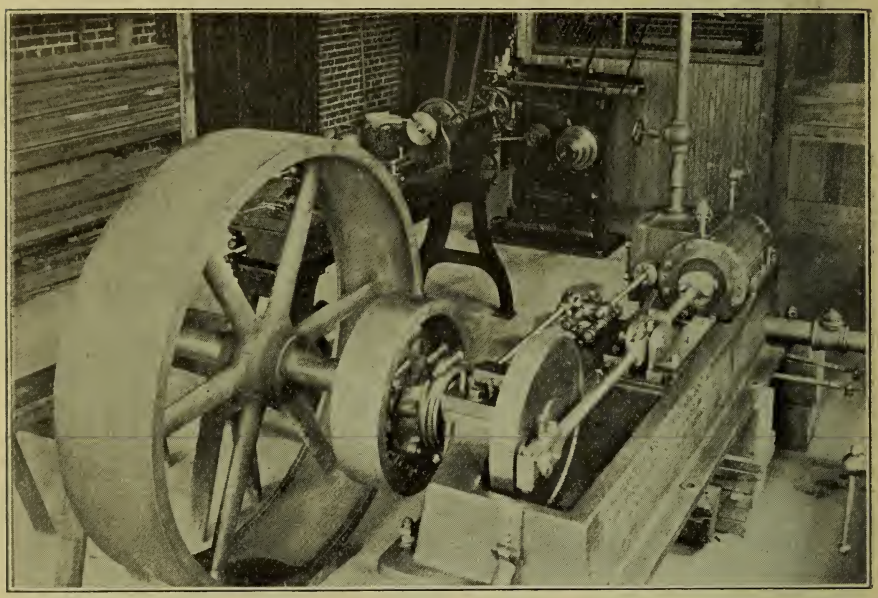
It has recently been estimated that insect injury to agricultural products amounts to over seven hundred millions of dollars each year. It is not only the actual destruction of the crops that causes loss, the effect upon the products may be to reduce the grade and make them more or less unsalable and unprofitable. These lectures are designed to treat of some of the more common pests that are responsible for this loss, with concise considerations of their life histories and habits and to discuss fully the means for control at our command.

Attention will also be given to the making and applying of insecticides.

XIII—CARPENTRY AND BLACKSMITHING—FIFTY-FIVE HOURS.

PROF. HARRY GWINNER,

ASSISTANTS, MR. GARNER AND MR. CRISP.

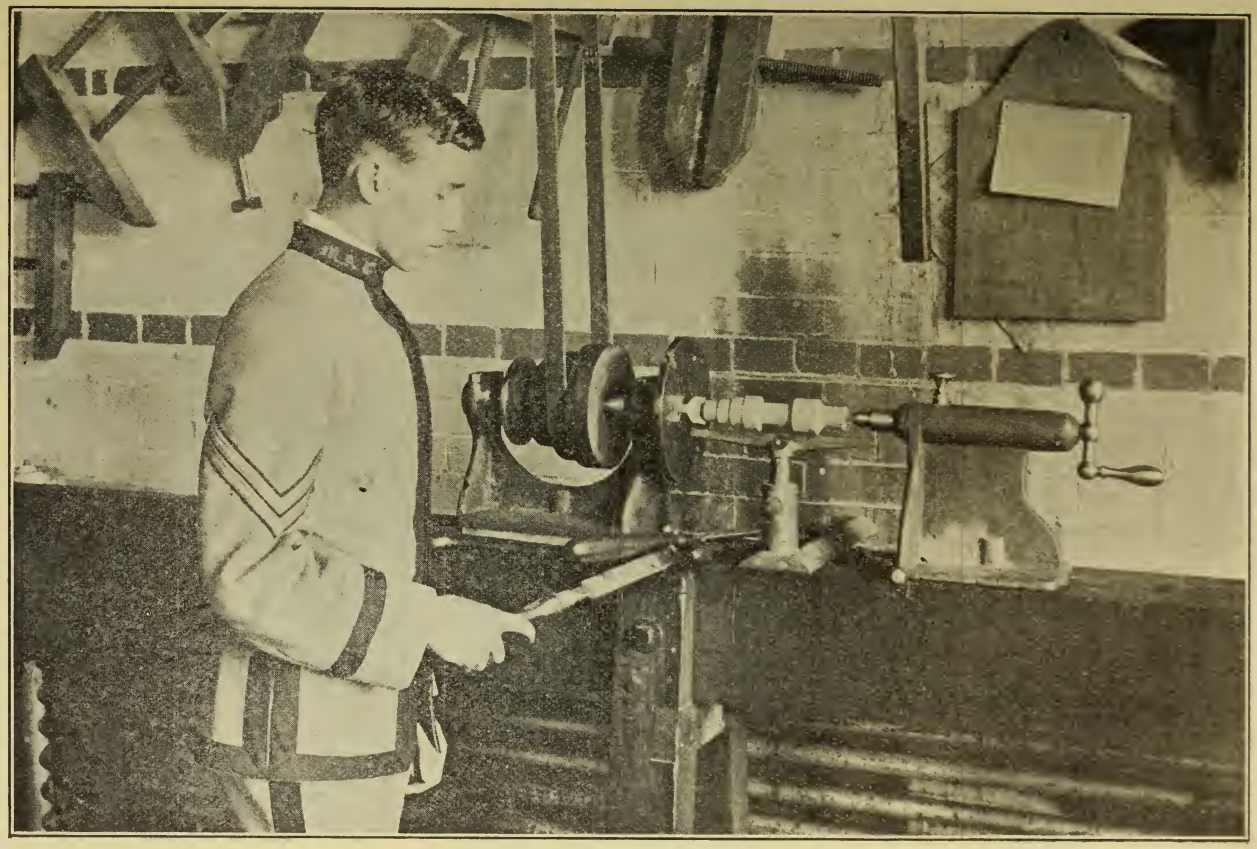


ENGINE IN MACHINE SHOPS—MADE BY STUDENTS.

A knowledge of this is very important to the agriculturist of this day. The equipment for this instruction is complete. The industrious, eager seeker after knowledge will accomplish much in the line of this work in the time allotted.

1. Sharpening of tools.
2. Adjustment of tools.
3. Sawing, planing, chiseling and boring.

Practical lessons in blacksmithing, mechanism and care of forge shop and smith's tools. Preparation of forge for fire. Building and managing the fires and fluxes. Forging, bonding, welding.



WOODTURNING.

XIV—FARM ACCOUNTS—TWELVE HOURS.

PROF. H. T. HARRISON.

A simple, concise and accurate method of keeping farm accounts. Business methods are as necessary to the successful farmer as to the merchant. Neither can do without a practical knowledge of bookkeeping.

XV—ROAD CONSTRUCTION AND LEVELING—FIVE HOURS.

PROF. HENRY LANAHAN.

A brief treatment of the principles involved and the methods used in the location, construction and maintenance of country roads.

An opportunity will be given those desiring it to learn the use of the level in laying out drains, etc. Students wishing to take the work in leveling must report to the instructor in charge within two weeks after the opening of the term.

XVI—CIVIL GOVERNMENT—TEN HOURS.

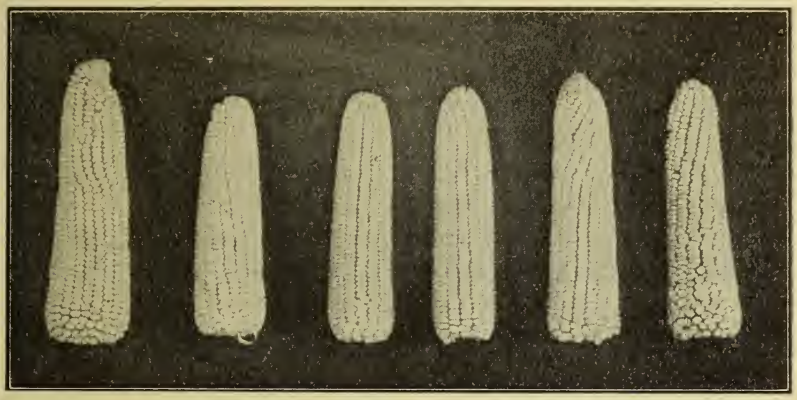
PROF. F. B. BOMBERGER.

The general principles of government; the rights and duties of citizens and an inquiry into the political institutions of Maryland.

CORN JUDGING CONTESTS.

The trustees of the Maryland Agricultural College having offered to the farmers' sons of Maryland twenty-three free scholarships to a special course of two weeks at the College, the following rules have been made to govern the competitive contests for awarding the scholarships:

The object of the scholarships being to awaken greater interest in the most important crop of the state and to help and reward those



"TYPES OF CORN EARS."

who have demonstrated their desire and ability to be helped, the selection of those to whom the scholarship shall be awarded has been wisely based upon a corn judging contest, in which the reward goes to the boy who has most profitably availed himself of the means already at his command.

For several years there has been great national interest taken in the improvement of the corn crop. The Experiment Stations, the United States Department of Agriculture and intelligent farmers in all parts of the country have made earnest efforts to the solution of the problems involved and many valuable facts have been discovered. The information thus gained has been spread

broadcast by means of bulletins, farmers' institutes, corn trains and the agricultural press.

It has been found that one of the most practical and effective means towards increasing the yield of corn is in the use of better methods of seed selection, and unusual efforts have been made to bring this fact and the means employed to the attention of farmers.

In co-operation with the great transportation companies special trains have been sent out by the Maryland Agricultural Experiment Station and the Department of Farmers' Institutes, carrying with them expert lecturers who preached the new gospel of good seed corn to thousands of farmers and farmers' boys, and even the waters of the Chesapeake were made to help by carrying a steamboat into Southern Maryland waters, where the same message was given to all who would attend.

Last winter Director Amoss, at the Farmers' Institutes, announced this action of the trustees and had at each institute a lecturer, who explained in detail the necessity for better seed selection and the methods of selecting.

These lectures were widely advertised and farmers' sons were specially invited to attend. In addition to the spoken lecture, printed rules for corn judging were distributed to all who would take them.

Again, last August a summer school was held at the College, the course containing lectures and practical experience in selecting, testing and breeding seed corn.

A particular effort was made to get the farmer boys of the state to attend this school and many availed themselves of the opportunity.

It seems, then, eminently fitting that the awarding of these scholarships should be based upon the degree to which young men have utilized past opportunities, and in so doing have demonstrated their determination to make the most of the future.

An examination of the rules governing the contest will show that every competitor will be judged absolutely on his own merits, as demonstrated in the character of his exhibit.

RULES.

1 Competition shall be limited to sons of Maryland farmers, residents of the county in which they compete.

2 No one shall compete who has had a course of instruction in an Agricultural College.

3 The competitive exhibit shall be in charge of Mr. Wm. L. Amoss, Director of Farmers' Institutes, a department of the Maryland Agricultural College, and shall be on the first day of the Annual Farmers' Institute in each county.

4 Each competitor shall exhibit ten (10) ears of corn, white or yellow, selected by himself, but not necessarily grown by himself.

5 The exhibits shall be judged by a competent judge, selected by the President of the Agricultural College and Director Amoss, and judgment shall be made in accordance with the printed scale of points in use at the Maryland Agricultural College, distributed by Director Amoss at the Farmers' Institutes last winter and appended to these rules.

6 Each exhibit of corn shall be delivered to Mr. Amoss securely done up in a box or neat parcel, with the name of the exhibitor inside in a sealed envelope, which shall not be opened until the award has been made.

7 After the judge has made his award he shall announce it to Mr. Amoss, who shall afford him an opportunity at the institute to make public his decision and the reasons therefor.

As each exhibit is opened for examination by the judge he shall give it a number, mark the same number on the outside of the sealed envelope containing the exhibitor's name. The envelope shall then be given to Mr. Amoss.

8 No one under fifteen or over twenty-one years of age will be allowed to enter the contest.

9 Each contestant must attend the day sessions of the Farmers' Institute.

10 Each specimen of premium corn will be sent by Wm. L. Amoss via express to the President of the Maryland Agricultural College for the use of the Department of Agriculture.

EXPLANATION OF POINTS IN CORN JUDGING.

MARYLAND AGRICULTURAL COLLEGE.

1 UNIFORMITY, 10 POINTS. The ten ears in the sample should possess similar characters and be true to the variety which they represent.

2 SHAPE OF EAR, 10 POINTS. The shape of the ear should conform to the variety type. The cylindrical or slightly tapering type is to be preferred as producing greatest uniformity of grain.

3 PURITY OF EAR, (a), GRAIN, 5 POINTS. Color of grain should be true to the variety and free from mixture. For one or two mixed kernels make a cut of one-fourth point, for three or four a cut of one-half point. For six or more cut one point, differences in shade of color as light or dark yellow, white or cream color must be scored according to breed characteristics.

(b), COB, 5 POINTS. A white ear with red cob or yellow ear with white cob should be marked zero. Such a mixture indicates lack of purity and a tendency to depart from the type.

4 MARKET CONDITION, 10 POINTS. Corn should be in good market and seed condition as indicated by freedom from dampness and mould, a clean, bright color, plump and well-developed grain, firmly packed around a firm well-cured cob.

5 TIPS, 5 POINTS. The tip should not taper more sharply than the ear, but should be of regular form, filled to the end with regular sized and regular shaped grains arranged in regular rows to the extremity. Flattened, divided or projecting naked tips are objectionable.

6 BUTTS, 5 POINTS. The rows should extend in regular order over the butt, leaving a cup-shaped depression when the shank is removed. Flat or unfilled butts, swelled butts or those having irregular or spreading rows are objectionable and must be cut according to judgment.

7 KERNEL, (a), UNIFORMITY OF, 10 POINTS. The kernels should be uniform in shape and size. Not only should the kernels be uniform on each individual ear, but the kernels of each ear should be uniform with those of every other ear of the exhibit. They should be true to the variety type.

(b), SHAPE OF, 5 POINTS. The kernels should be wedge-shaped, so that their edges touch from tip to crown. The tip portion is rich in protein and oil, and hence of high feeding value. A large germ is important for vigorous growth and high quality.

8 LENGTH OF EAR, 10 POINTS. The length of the ear varies according to the variety type and the ideal of the breeder, but all the ears of the exhibit should be of the same length. Where no breed standard has been established a length of from nine to ten inches may be taken as a standard. Usually ears much over ten inches long are shallow grained and unfilled at butt and tip.

9 CIRCUMFERENCE OF EAR, 5 POINTS. The circumference varies with the variety, yet there should be a relation between the circumference and the length. If the circumference is very great, there is usually a large cob which makes the ear mature slowly, often retarding the curing until the ear has been injured by frost. Where there is no variety standard the commonly adopted scale is that the circumference should be to the length as 3 is to 4. The circumference should be taken one-third the distance from the butt.

10 SPACE, (a), FURROWS BETWEEN THE TOPS OF THE ROWS, 5 POINTS. The furrows between the rows should be of sufficient size to permit the kernels to dry out readily, but not so large as to lose in proportion of corn to cob. A convenient rule is for a furrow of one-thirty-second of an inch no cut. For a furrow one-sixteenth of an inch a cut of one-half point. For more than one-sixteenth of an inch a cut of one point.

(b), SPACE BETWEEN THE TIPS OF KERNELS AT THE COB, 5 POINTS. This is highly objectionable, as reducing the weight of grain and indicating low vitality and feeding value.

11 PROPORTION OF GRAIN TO COB, 10 POINTS. To determine the proportion of grain, weigh every alternate ear of the exhibit, shell off the grain and divide the weight of the ears into the weight of the grain. The result will give the per cent. of grain. As in case of length and circumference there are variety standards for proportion of grain. Where there is no variety standard the proportion should not be less than 86 per cent. In scoring the proportion make a cut of one-half point for every per cent. below the standard.

The proportion of grain depends on the size of the cob, the length and shape of grain, maturity and dryness of ears.

MARYLAND CORN GROWING.

Six hundred and twenty-eight thousand, seven hundred and ninety-five acres of Maryland land were in corn in the year 1905. The total production was 23,202,536 bushels, representing a value of $11,137,217. The average yield per acre was 36.9 bushels. There is no question but that better methods of seed selection would increase this at least ten bushels per acre. That would add to the crop 6,287,950 bushels, worth, at the same price as above, something over three million dollars.

Is not three million dollars a sufficient incentive to the farmer boys of the State to make them take the short course at their Agricultural College, and to the fathers of the boys to undergo the slight sacrifices necessary to send their sons where they may get such useful information?

TWO WEEKS COURSE IN AGRICULTURE.

This course will begin at nine o'clock A. M., Monday, April 8, 1907, and close at four o'clock P. M., Friday, April 19th.

CRIMSON CLOVER AND HAIRY VETCH.

Owing to the time being short, it is thought best to take up a few subjects in this course and get the most possible out of them,

rather than take up many subjects and get little out of a greater number. For this reason three subjects have been selected:

CORN JUDGING, LIVE STOCK JUDGING, GROWING OF LEGUMINOUS CROPS.

These three cover the greater portion of the agricultural field.

The following schedule will be observed during the two weeks course in agriculture. In addition to this schedule, lectures will be given several nights during the two weeks on such subjects as the students may desire. Should the students wish it, some lectures and practical instruction will be given in horticulture on Saturday.

SCHEDULE FOR FIRST WEEK.

	MORNING.	AFTERNOON.
TUESDAY.	Selecting of Seed Corn. Practical work and lecture.	Selection of Dairy Cattle. Practical work and lecture.
WEDNESDAY.	Selection of Seed Corn. Practical work and lectures. Germinating test for seed corn. Practical work and lecture.	Selection of Dairy Cattle. Practical work and lecture.
THURSDAY.	Scoring Corn. Practical work. Germinating test for seed corn. Practical work.	Selection of Dairy Cattle. Practical work and lecture.
FRIDAY.	Scoring Corn. Practical work. Germinating test of seed corn. Practical work.	Use of Score Card with Dairy Cows. Practical work and lecture.

SCHEDULE FOR SECOND WEEK.

	Morning.	Afternoon.
MONDAY.	Legumes as Fertilizers. Lecture. Germinating test for seeds of legumes. Practical work.	Use of Score Card with Dairy Cattle. Practical work.
TUESDAY	Legumes as Food. Lecture. Varieties of legumes. Lecture.	Use of Score Card with Dairy Cattle. Practical work.
WEDNESDAY.	Germinating Test for Seed Corn. Practical work. Legume varieties. Lecture.	Selection of Steers for Feeding. Practical work and lecture.
'THURSDAY.	Germinating Test for Seed Corn. Practical. Corn Breeding. Lecture.	Selection of Steers for Feeding. Practical work and lecture.
FRIDAY.	Production of Legumes. Lecture. Corn Breeding. Lecture.	Selection of Draft Horses. Practical work and lecture.

SEED CORN GERMINATION TEST.

The covering material has been removed leaving the grains undisturbed in the box. The white roots and sprouts of the germinated grains are seen.

REQUIREMENTS FOR THE TWO WEEKS COURSE.

Boys holding scholarships for the Two Weeks Special Course will not be required to wear uniforms or attend any military duties. They will be given board, lodging and tuition free, but will be required to bring with them pillows, bed clothes and towels and will be required to look after their own rooms.

The course will be open to young men not holding scholarships. Should any such attend the course, they will be required to pay four dollars a week for table board. In all other respects they will be treated as the scholarship students.

CORN LITERATURE.

Boys who think of competing in the corn judging contest would do well, before selecting their exhibit, to study closely the scale of points for corn judging appended to the rules governing the contest.

Further information may be had from bulletins issued by the United States Department of Agriculture and various Experiment Stations, which will be sent free to all who write for them. "Corn Judging," by A. D. Shamel, is a standard work on the subject and may be had for a small price of Orange, Judd & Co., New York City.

THE WESTERN STATES.

In the Western States, where short courses at the Agricultural Colleges are offered as prizes to boys in corn judging contests, broad-minded men of means have, in many instances, aided the good work by contributing from their private means toward the payment of traveling expenses of the students. The opportunity now offers itself in Maryland. The trustees of the College have offered all they feel the College should give—free tuition, board and lodging; but, in some cases, the payment of traveling expenses is a serious matter to a boy.

Are there not men in Maryland sufficiently interested in its agricultural development to come forward and help deserving young men as is being done in the West?

AGRICULTURAL EDUCATION.

Agriculture is the oldest and most important of all industries. It is the largest in the amount and value of its products. The one in which more people are engaged than any other; the one to which nearly all others look for the raw material to keep the mill and factory running, as well as for the food to supply the tables of those who run them; the one that grants to those engaged in it freedom of thought and action and broad and symmetrical development. History and experience have proven that it is the basis of all permanent national wealth and the promoter of national virtue.

As from the earth all vegetables and plant growth spring, so the other industries rise from agriculture as a foundation, and the sciences, arts, manufactures and commerce follow as a natural and inevitable consequence.

Our agricultural resources and the progressive manner in which they are being developed are enriching the nation in an incalculable measure, and it is due to them that the balance of trade with Europe is favorable to us to the extent of millions of dollars annually. Consular reports and statistics gathered by the National and State Departments bear out these statements. How important it is, then, that a class engaged in an industry so vital to the American people and so productive of wealth to the nation should be liberally, thoroughly and technically educated. All civilized men have more or less appreciation of education and its benefits and are in some degree "educated" as the term is understood.

At present no one doubts the value of education to any class of people. In fact, nothing speaks with greater praise of this grand and glorious nation of ours than do the public schools which have been established for the development of the young, living in city, village or country lane. Go where you may into any community, county or State, and there, if agricultural education with all its new and commendable features have been taken up, the strong evi-

dences bearing testimony of the fact are the beautiful homes, improved stock and well-kept farms.

The object of education is to develop the individual, to fit him for life, to make his condition more agreeable, not only to himself, but also with those with whom he comes in contact. Education is the pathway to progress. It is the crowning glory of civilization. Now, where is the farmer who does not need these accomplishments? He is the man whose intellect and industry provides food for the world. His products renew the brain cell of the philosopher and give bloom to the maiden's cheek. Without him armies would be useless and the wheels of progress would stand still. He forms a large part of the population of an extensive community. Should not such an important element of society be invested with all that tends to direct his energies and make his efforts more effectual?

With the increase in land values comes a demand for an increase of its productiveness. "How may this be accomplished?" is the question. This question cannot be answered by a word, but by more intelligent direction, a broader knowledge of the breeds of stock, of crops and of soil, and, withal, a closer attention to details. To accomplish this, education is necessary, and, in fact, the farmer must possess qualifications that would fit him for success in almost any other field of human endeavor.

The farmer requires a broad, scientific knowledge. He deals with plants and must know botany; his range embraces animals—he must study Natural History; he must have a knowledge of Chemistry and undertsand thoroughly the principles of business. The birds are his friends, and he must protect them. At length, with all his technical knowledge, HE MUST NOT FORGET HIS CIVIC DUTIES, for throughout the country he wields a political influence which should be directed by intelligence, because it is the only guarantee of liberty.

For a long time public sentiment has been against the farmer; he has been the subject for the comic illustrator, the victim many times of the street fakir and the one at whom all sorts of epithets have been cast. All this exaggeration by press and public has had its effect upon the sensitive boy or girl, and, moreover, has been

very discouraging and harmful to the cause of agricultural education. But, nevertheless, these things are of only passing moment and do not affect young men and women of fixed purposes.

The ancient trinity of popular professions—law, ministry and medicine—no longer appeals with its old-time potency to a farm-bred boy. He finds that modern farming, in all its fullness, to be financially successful, demands the highest degree of brain efficiency. Modern science applied to agriculture has improved varieties of fruit and grains and has increased their productiveness. It has made possible the improvement of all our types of domestic animals, so that they are more useful for specific purposes. It has taught us how to combat animal and plant diseases and insect pests and how to care for the plant and the animal to secure the best development.

In the development of our improved breeds of animals, scientific knowledge of the laws of reproduction and the processes of nutrition have been essential factors. The animal becomes plastic in the hands of the skilful breeder and he is able to perfect it along lines in which it has inherited tendencies. Thus, the dairyman has developed the cow capable of producing two or three pounds of butter per day from ancestors which produced less than half as much.

Having endeavored to show in a brief way the necessity and benefits of agricultural education, let us consider some of the means by which it may be secured.

There seems to be a growing demand that everything should be taught from the standpoint of the practical in education. To a certain degree the courses in both rural and city high schools are being changed from year to year with a view to providing instruction which shall relate more closely to the requirements of the store, the workshop and the professions. In the rural schools it has been found that nature study and elementary agriculture can be taught with a considerable degree of success. This is right and proper, for in the earlier life of the pupil the world of Nature is his world. The child's earlier education is, to a large extent, in Nature study and by Nature's methods. Is there any more natural or better way

of developing boys and girls than to follow and study the laws that underlie the principles of agriculture? *"Learning those things in Nature that are best worth knowing, to the end of doing those things which make life most worth living,"* has been expressed as the purpose of Nature study.

Improvement is the slogan of the times. In the rural school improvement needs to be made, not only in the buildings and their surroundings but also in the text-books and methods of instruction. The possibilities of science and the training that comes from farm work are not suggested to the farmer's child in so many of the books. The problems in arithmetic could have a more practical application to the pupil's life on the farm and not so much to commercial and professional affairs. Would it not be better to give the boys problems like the following?

Problem 1.—Find which is more profitable of two cows for the farmer to keep, the one that gives 4,800 lbs. of milk annually and whose milk tests 4.5 per cent. of butter fat, or the cow that gives 6,000 pounds of milk annually, testing 3.8 per cent. butter fat (when one pound of butter fat is equivalent to 1 1-16 pounds of butter, butter being worth 25 cents per pound.

Problem 11.—Compute the value of a ton of fertilizer containing 7 per cent. nitrogen, 3 per cent. of potash and 8 per cent. of available phosphoric acid, nitrogen being worth 15 cents per pound, potash 6 cents and phosphoric acid 5 cents.

Prominence should be given to such words as "nitrogen," "protein," carbohydrates," "phosphates," "ringbone" and "spavin" in the spelling books. These words pertain to agriculture and rightfully belong in the rural school books.

So, in the matter of text-books, let them apply to agriculture and the farm, and then the boys and girls will see the need of education as a preparation for their life's work.

Now, for the youth who can no longer attend school, there is the agricultural press and the bulletins issued by the Department of Agriculture and by the various Experiment Stations. These bulletins are prepared by experts and no more reliable information is to be found anywhere than is given in them.

A CRIMSON CLOVER FIELD AND A CLASS IN FARM CROPS

Farmers Institutes are grand things. Here the sons and farmers see and talk with those who have had experience in their lines and are competent to impart information.

A visit to a good, clean county fair has its educational value. While there, the farmer can see what is being done in the way of improving the breeds of live stock and the different kinds of grains and grasses. He may discuss methods of breeding, the values of certain breeds of live stock for certain purposes, under known conditions, and the best way of combatting vermin and disease. And, if he has a pocket note-book, he can carry home for future reference much valuable information about live stock, grains, fruits and machinery.

Better still is a course in agriculture at a school where some of the basic principles are taught and where practical demonstrations of many valuable things are made and worked out under the eye of the student.

Some States are so aroused to the needs and benefits of agricultural education as to provide instruction in the rural schools. Others have not gone so far in their system of education, but have organized County Agricultural High Schools. Wisconsin was the first to establish one of these high schools. Then followed Minnesota, Nebraska, Oklahoma and Maine, and just recently in Alabama an Agricultural High School has been started in each Congressional District, and in Maryland, as well, we find an Agricultural High School recently established in Cecil County.

These county schools of agriculture are a new feature in the American system of education, and the interest which they have awakened among the country folk speak strongly in their favor. Again, the progress which they have made and the work which they are doing is causing the leading educators and prominent men of affairs to grow enthusiastic in their commendation. But while these schools are proving successful, there is need of all the schools being articulated into a uniform system. There should be a gradual ascendency from the primary work, through the High School to the Agricultural College. Each step in the student's education would then keep leading him on to larger and broader fields of knowledge, applicable in every respect to his life's work.

A CLASS IN STOCK JUDGING

At the State Institutions, so wisely provided for by the National and State Governments, a student can get a broader foundation and a more thorough knowledge of the underlying principles of agriculture than elsewhere. There workshops and laboratories are fitted out with the best of apparatus for personal investigation by the students, and by reason of the excellent live-stock equipment at a few of the colleges, young men are able to make a thorough study of the different breeds of live stock. They are given instruction in judging stock until they become quite expert judges of breed characteristics and of the animal form which can best perform a given work. Instruction in the judging of grains, and especially of corn, is given, and only recently large farm machine factories are helping to make up the equipment in farm machinery to aid the student in his studies and investigations.

Specialists in all lines are employed to guide the student in his work. These men are not only instructing the young, but are carrying on special work in agricultural research, the methods and results of which are carefully studied by the students.

Several different courses are provided at these State Institutions. We find the regular four courses in general agriculture or some specialized line, such as Animal Husbandry, Agronomy, Horticulture, or Dairying. Special Short Courses of two years are offered in some institutions, and, again, short winter courses are organized for the benefit of farmers in general.

At these latter schools many times corn is exhibited by individuals and Farmers' Clubs, prizes awarded for the best exhibit and judging contests are organized for boys. This bulletin gives an outline of short courses in agriculture given at the Maryland Agricultural College.

So now the way is found replete with opportunities of advancement to the young and to all who have the courage to try. Each and every young person should start out with the determination to win for himself an education—the broadest and best that he can get and one which will bring the greatest success to his calling.

No young man or young woman need hesitate about preparing for a life on the farm. The farmers' occupation will always be

permanent. Railroads and steamships may give way to aerial navigation; the ingenuity of the inventor may reduce manufacturing to a very simple matter; but, in spite of the chemist's fondest dreams, the tiller of the soil will find ready market for his products as long as the human race hungers and man is chilled by Arctic frosts and scorched by torrid suns.

B. E. Porter,

Instructor in Animal Husbandry,
Maryland Agricultural College.

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UNIVERSITY OF ILLINOIS

PRESIDENT'S OFFICE

Maryland Agricultural College Bulletin

JULY-SEPTEMBER, 1907

Vol. 4 No. 1

THE MARYLAND AGRICULTURAL COLLEGE

COLLEGE PARK, MARYLAND

ISSUED QUARTERLY

Entered at College Park, Md., as second-class matter under Act of Congress, July 16, 1894.

UNIVERSITY OF ILLINOIS
PRESIDENT'S OFFICE

INTRODUCTION.

The farmers of Maryland are invited to read carefully the following pages and then decide if they can afford to have their sons fail to attend at least one of the special courses in agricultural instruction herein set forth.

Though the prices of farm products have advanced somewhat in this "era of general prosperity," yet the prices of practically everything which the farmer has to buy have increased, and it behooves him if he would hold his own to give yet greater attention to every legitimate means of increasing the products of his farm at a minimum of cost and of securing for those products the highest pecuniary return.

Science has been working for agriculture no less successfully than for other arts and occupations, yet science has benefited the farmer less than his competitors solely because he will not heed her teachings. Professional schools, technical schools, schools of manual training and engineering are crowded with young men whose fathers wish for them a successful career and who realize that in this day success depends on special education. The farmer alone, in too many cases, seems to think that education is unnecessary and that in his vocation there have been no advances and no improvements.

The farmer boy of today is as much in need of special education in his line as is the lawyer, the doctor, the engineer, and it is a gross injustice to the lad who elects to stay on the farm to fail to give him through a course at an agricultural college the technical equipment which is necessary to insure success.

TEN-WEEKS SPECIAL COURSE IN AGRICULTURE.

BEGINNING TUESDAY, JANUARY 7, 1908.

SYNOPSIS OF COURSE.

1. SOILS--TWENTY-TWO HOURS.

PROF. W. T. L. TALIAFERRO

The examination and classification of soils; the relation of soils to water, air, heat; adaptation of soils to crops; improvement of physical condition of soils; drainage, ventilation, cultivation, green manures, cover crops, rotation of crops.

II. PLANT PRODUCTION--THIRTY HOURS.

HARVEST TIME IN MARYLAND.

This course embraces the growing of farm crops, including the selection of seed, preparation of the soil, fertilizing, cultivation and harvesting. Particular attention is given to the growing of alfalfa, cow-peas, clover and other legumes for stock feeding and soil improvement.

Maryland is a "Corn State." The corn crop occupies a greater acreage and is worth more to the farmers of the State than any other crop. Its average yield per acre is already greater than in some of the "Corn States" of the West and is on the increase. Ten bushels per acre could easily be added to it by a more judicious system of seed selection than at present prevails. That would mean at ordinary prices an increase in the income of the corn growers of Maryland of more than three millions of dollars, a very substantial increase and well worth trying for. In this course great attention is paid to this important subject, and students are made thoroughly familiar by actual practice with the most improved methods of selecting and testing seed corn. They will also be given practical instruction in the principles of breeding corn for improvement in yield and feeding value and in the most approved methods of cultivating and fertilizing this important crop.

III—AGRICULTURAL CHEMISTRY--TWENTY HOURS.

DR. H. B. MCDONNELL AND MR. MORGAN.

Soils; their formation, classification and properties. The mineral constituents of soils and their bearing on plant growth. The best means of supplementing them when needed for plant growth.

IV—MANURES--TWENTY HOURS.

DR. H. B. MCDONNELL.

The best methods of preserving and applying farm manure. The relative value of the different manures and fertilizers. The maintenance of soil fertility. The place of lime in the farm economy.

V—STOCK FEEDING--TWENTY HOURS.

MR. B. E. PORTER.

The work in Stock Feeding will cover the principles of animal nutrition, the composition of feeding stuffs, their combination into properly balanced rations and the relation between the sustenance of animals and their products. The subject will be considered under the following heads:

1. The chemical elements and compounds in feeds.
2. Function of the nutrients.
3. Digestion of food.
4. Cattle foods. Commercial feeding stuffs.
5. The selection and compounding of rations.
6. Feeding growing animals.
7. Feeding for the production of milk, meat, wool, eggs and energy, or work.

VI—FARM LIVE STOCK--TWENTY-EIGHT HOURS.

MR. B. E. PORTER.

Principal breeds of horses, cattle, sheep and hogs; their uses and adaptation; principles and practice of stock breeding; stock judging.

SOME SPECIMENS OF THE DAIRY HERD.

This section includes a thorough course in judging farm live stock, especially dairy and beef cattle. The student is taught by actual handling of the stock and the use of the score card to correctly select animals for different purposes and to accurately gauge their value for their special purpose.

VII—DAIRYING--TWENTY HOURS.

MR. B. E. PORTER.

The dairy instruction will consist of lectures on bacteriology and the necessary precautions to insure a good product; lectures on the obtaining of cream from the milk, comparing the old gravity process and the use of separators; on milk testing with the Babcock test, and the place of the test in modern dairying and on butter making, with the use of the acid test, which practically insures the making of good butter. The lectures on milk testing and butter making will be supplemented by practical instruction, and each student will be required to handle the Babcock test, as well as the separator and the churn.

VIII--HORTICULTURE—FORTY HOURS.

MR. P. M. NOVIK.

STUDENTS MAKING GRAFTS.

A discussion of the fundamental principles of fruit and vegetable growing, orchard cultivation, fertilization, pruning, grafting, packing and marketing of fruits. The construction and management of hotbeds, cold-frames and the propagation of plants. These lectures will be supplemented by practical work in greenhouse and orchards.

IX—VETERINARY SCIENCE—FORTY HOURS.

DR. S. S. BUCKLEY.

An elementary study of the diseases of live stock should be made by everyone having charge of domesticated animals. Frequently farm animals become a source of considerable loss through neglect or unintelligent management when out of condition.

While the treatment of sick animals should rest with veterinarians trained in such work, yet the owner or manager must know when such services are needed and how to carry on such treatment intelligently when directed by the veterinarian. The effort is made in the following course of lectures to prepare the student with such knowledge and to enable him the better to understand the bulletins, reports and treatises upon veterinary subjects which he may possess:

1. Nutrition.
2. Diseases due to mistakes in feeding.
3. Infectious diseases.
4. Cattle and their common diseases.
5. The examination of a horse for soundness.
6. Lameness.
7. The foot—its care and shoeing.
8. The use of medicines and minor operations.
9. Stable sanitation and the prevention of tuberculosis.

X—TOBACCO—FIVE HOURS.

PROF. H. J. PATTERSON.

The plant bed, culture, harvesting, curing, marketing and effects of fertilizing elements upon the quality.

XI—PLANT PHYSIOLOGY AND PATHOLOGY—FIFTEEN HOURS.

PROF. J. B. S. NORTON.

STUDYING PLANT DISEASES.

Five lectures on the general principles of plant life and structure; how plants live, grow and reproduce, and how they are influenced by different conditions of light, temperature, moisture and other factors in their surroundings, considered with special reference to agricultural problems. Five lectures on the causes, symptoms and treatment of plant diseases, with practice work in examination and study of diseased plants and the preparation and use of remedies and preventatives.

This course will include the discussion of the laws of plant life, the uses and structure of plant parts, nutrition, growth, formation of products by the plant, reproduction by seeds and otherwise, seed testing, useful plants, weeds, poisonous plants, causes of disease, parasitic fungi, preparation of fungicides and spraying.

XII—ECONOMIC ENTOMOLOGY—TWENTY HOURS.

PROF. T. B. SYMONS.

It has recently been estimated that insect injury to agricultural products amounts to over seven hundred millions of dollars each year. It is not only the actual destruction of the crops that causes

CLASS IN ENTOMOLOGY.

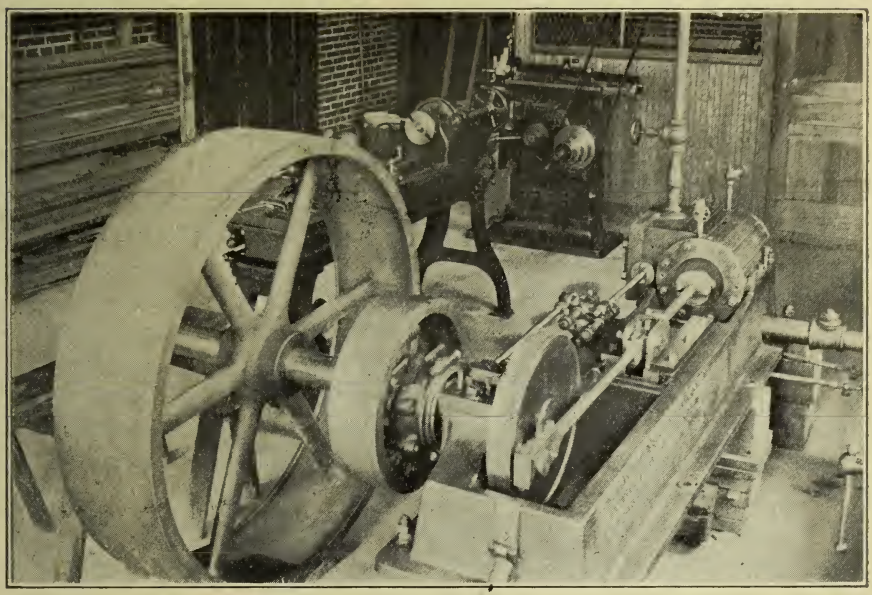
loss, the effect upon the products may be to reduce the grade and make them more or less unsalable and unprofitable. These lectures are designed to treat of some of the more common pests that are responsible for this loss, with concise considerations of their life histories and habits and to discuss fully the means for control at our command.

Attention will also be given to the making and applying of insecticides.

XIII—CARPENTRY AND BLACKSMITHING—FIFTY-FIVE HOURS.

PROF. HARRY GWINNER.
ASSISTANTS, MR. MICHAEL AND MR. CRISP.

A knowledge of this is very important to the agriculturist of this day. The equipment for this instruction is complete. The indus-



ENGINE IN MACHINE SHOPS—MADE BY STUDENTS.

trious, eager seeker after knowledge will accomplish much in the line of this work in the time allotted.

1. Sharpening of tools.
2. Adjustment of tools.
3. Sawing, planing, chiseling and boring.

Practical lessons in blacksmithing, mechanism and care of forge shop and smith's tools. Preparation of forge for fire. Building and managing the fires and fluxes. Forging, bonding, welding.

XIV—FARM ACCOUNTS—TWELVE HOURS.

PROF. H. T. HARRISON.

A simple, concise and accurate method of keeping farm accounts. Business methods are as necessary to the successful farmer as to the merchant. Neither can do without a practical knowledge of bookkeeping.

XV—ROAD CONSTRUCTION AND LEVELING—FIVE HOURS.

PROF. THOMAS H. TALIAFERRO, C. E., PH. D.

A brief treatment of the principles involved and the methods used in the location, construction and maintenance of country roads.

An opportunity will be given those desiring it to learn the use of the level in laying out drains, etc. Students wishing to take the work in leveling must report to the instructor in charge within two weeks after the opening of the term.

XVI—CIVIL GOVERNMENT—TEN HOURS.

PROF. F. B. BOMBERGER.

The general principles of government; the rights and duties of citizens and an inquiry into the political institutions of Maryland.

SCHOLARSHIPS FOR TEN-DAYS COURSE.

In order to encourage improvement in the corn crop, the great staple of Maryland farmers, the trustees of the Maryland Agricultural College in 1906 offered to the farmer boys of the State twenty-three free scholarships, with all expenses paid, to a ten-days course at the college, consisting of lectures and practical work in seed corn selection and testing, the growing of alfalfa and other legumes, and the judging, selection and feeding of farm live stock.

These scholarships were awarded to the boys who exhibited the best ten ears of corn at the Farmers' Institute, held in their respective counties. As a result, a number of bright young men gathered at the college on the 8th of last April and received free of all charge ten days of practical instruction in subjects most valuable to them in their future career as farmers.

Though the time in this course was short and the subjects taught necessarily limited, the instruction given was of such a character and the eagerness of the boys to receive it was so great that one and all on leaving at the end of the period testified that they were more than satisfied with what they had received and believed that in no other way could they have utilized their time to so great advantage.

The trustees of the college have repeated this generous offer for the coming winter, and the farmer boys of the State have again the opportunity to obtain for themselves, practically without cost, the benefits of this timely and valuable course of instruction.

While the scholarships in this course are limited to one for each county, there is no limit to the number of young men who may attend. The only charge for those not holding scholarships will be the very moderate one of eight dollars for table board.

Prospective competitors for these scholarships will do well to read carefully the rules governing the competitions, which, with a summary of the course and a score card for corn judging, are given in the following pages.

Since the awarding of the scholarships is to be made at the Farmers' Institutes, the ten-days short course cannot begin till after the last institute has been held. It will, however, commence on the Tuesday following the close of the last institute for the season of 1908.

RULES GOVERNING THE AWARDING OF SCHOLARSHIPS FOR THE SPECIAL TEN-DAYS COURSE FOR 1908.

1 Competition shall be limited to sons of Maryland farmers, residents of the county in which they compete.

2 No one shall compete who has had a course of instruction in an Agricultural College.

3 The competitive exhibit shall be in charge of Mr. William L. Amoss, Director of Farmers' Institutes, a department of the Maryland Agricultural College, and shall be on the first day of the Annual Farmers' Institute in each county.

4 Each competitor shall exhibit ten (10) ears of corn, white or yellow, selected by himself, but not necessarily grown by himself.

5 The exhibits shall be judged by a competent judge, selected by the President of the Agricultural College and Director Amoss, and judgment shall be made in accordance with the printed scale of points in use at the Maryland Agricultural College, distributed by Director Amoss at the Farmers' Institutes last winter and appended to these rules.

6 Each exhibit of corn shall be delivered to Mr. Amoss securely done up in a box or neat parcel, with the name of the exhibitor inside in a sealed envelope, which shall not be opened until the award has been made.

7 After the judge has made his award he shall announce it to Mr. Amoss, who shall afford him an opportunity at the institute to make public his decision and the reasons therefor.

As each exhibit is opened for examination by the judge he shall give it a number, mark the same number on the outside of the sealed envelope containing the exhibitor's name. The envelope shall then be given to Mr. Amoss.

8 No one under fifteen or over twenty-one years of age will be allowed to enter the contest.

9 Each contestant must attend the day sessions of the Farmers' Institute.

10 Each specimen of premium corn will be sent by Mr. Wm. L. Amoss via express to the President of the Maryland Agricultural College for the use of the Department of Agriculture.

EXPLANATION OF POINTS IN CORN JUDGING.

MARYLAND AGRICULTURAL COLLEGE.

1 UNIFORMITY, 10 POINTS. The ten ears in the sample should possess similar characters and be true to the variety which they represent.

2 SHAPE OF EAR, 10 POINTS. The shape of the ear should conform to the variety type. The cylindrical or slightly tapering type is to be preferred as producing greatest uniformity of grain.

3 PURITY OF EAR (a), GRAIN, 5 POINTS. Color of grain should be true to the variety and free from mixture. For one or two mixed kernels make a cut of one-fourth point, for three or four a cut of one-half point. For six or more cut one point, differences in shade of color as light or dark yellow, white or cream color must be scored according to breed characteristics.

(b), COB, 5 POINTS. A white ear with red cob or yellow ear with white cob should be marked zero. Such a mixture indicates lack of purity and a tendency to depart from the type.

4 MARKET CONDITION, 10 POINTS. Corn should be in good market and seed condition as indicated by freedom from dampness and mould, a clean, bright color, plump and well-developed grain, firmly packed around a firm well-cured cob.

5 TIPS, 5 POINTS. The tip should not taper more sharply than the ear, but should be of regular form, filled to the end with regular sized and regular shaped grains arranged in regular rows to the extremity. Flattened, divided or projecting naked tips are objectionable.

6 BUTTS, 5 POINTS. The rows should extend in regular order over the butt, leaving a cup-shaped depression when the shank is removed. Flat or unfilled butts, swelled butts or those having irregular or spreading rows are objectionable and must be cut according to judgment.

7 KERNEL. (a), UNIFORMITY OF, 10 POINTS. The kernels should be uniform in shape and size. Not only should the kernels be uniform on each individual ear, but the kernels of each ear should be uniform with those of every other ear of the exhibit. They should be true to the variety type.

(b), SHAPE OF, 5 POINTS. The kernels should be wedge-shaped so that their edges touch from tip to crown. The tip portion is rich in protein and oil, and hence of high feeding value. A large germ is important for vigorous growth and high quality.

8 LENGTH OF EAR, 10 POINTS. The length of the ear varies according to the variety type and the ideal of the breeder, but all the ears of the exhibit should be of the same length. Where no breed standard has been established a length of from nine to ten inches may be taken as a standard. Usually ears much over ten inches long are shallow grained and unfilled at butt and tip.

9 CIRCUMFERENCE OF EAR, 5 POINTS. The circumference varies with the variety, yet there should be a relation between the circumference and the length. If the circumference is very great, there is usually a large cob which makes the ear mature slowly, often retarding the curing until the ear has been injured by frost. Where there is no variety standard the commonly adopted scale is that the circumference should be to the length as 3 is to 4. The circumference should be taken one-third the distance from the butt.

10 SPACE (a), FURROWS BETWEEN THE TOPS OF THE ROWS, 5 POINTS. The furrows between the rows should be of sufficient size to permit the kernels to dry out readily, but not so large as to lose in proportion of corn to cob. A convenient rule is for a furrow of one-thirty-second of an inch no cut. For a furrow one-sixteenth of an inch a cut of one-half point. For more than one-sixteenth of an inch a cut of one point.

(b), SPACE BETWEEN THE TIPS OF KERNELS AT THE COB, 5 POINTS. This is highly objectionable, as reducing the weight of grain and indicating low vitality and feeding value.

11 PROPORTION OF GRAIN TO COB, 10 POINTS. To determine the proportion of grain, weigh every alternate ear of the exhibit, shell off the grain and divide the weight of the ears into the weight of the grain. The result will give the per cent. of grain. As in case of length and circumference there are variety standards for proportion of grain. Where there is no variety standard the proportion should not be less than 86 per cent. In scoring the proportion make a cut of one-half point for every per cent. below the standard.

The proportion of grain depends on the size of the cob, the length and shape of grain, maturity and dryness of ears.

SPECIAL TEN-DAYS COURSE IN SEED CORN SELECTION, LIVE STOCK JUDGING AND LEGUME GROWING.

SCHEDULE FOR FIRST WEEK.

	MORNING.	AFTERNOON.
TUESDAY.	Selecting of Seed Corn. Practical work and lecture.	Selection of Dairy Cattle. Practical work and lecture.
WEDNESDAY.	Selection of Seed Corn. Practical work and lecture. Germinating test for seed corn. Practical work and lecture.	Selection of Dairy Cattle. Practical work and lecture.
THURSDAY:	Scoring Corn. Practical work. Germinating test for seed corn. Practical work.	Selection of Dairy Cattle. Practical work and lecture.
FRIDAY.	Scoring Corn. Practical work. Germinating test of seed corn. Practical work.	Use of Score Card with Dairy Cows. Practical work and lecture.

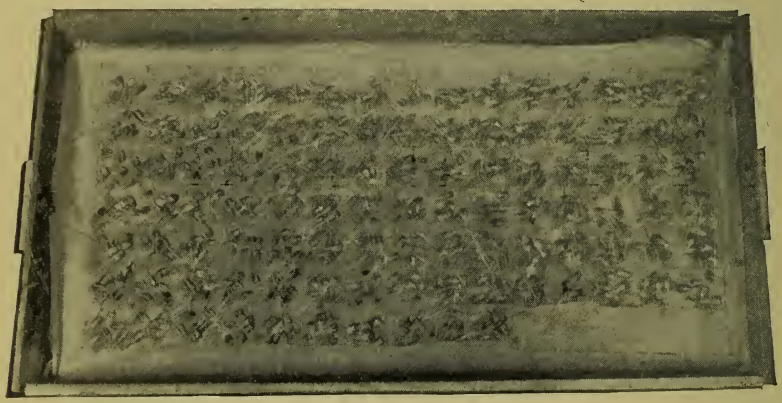
SCHEDULE FOR SECOND WEEK.

	MORNING.	AFTERNOON.
MONDAY.	Legumes as Fertilizers. Lecture. Germinating test for seeds of Legumes. Practical work.	Use of Score Card with Dairy Cattle. Practical work.
TUESDAY.	Legumes as Food. Lecture. Varieties of legumes. Lecture.	Use of Score Card with Dairy Cattle. Practical work.
WEDNESDAY.	Germinating Test for Seed Corn. Practical work. Legume varieties. Lecture.	Selection of Steers for Feeding. Practical work and lecture.
THURSDAY.	Germinating Test for Seed Corn. Practical. Corn Breeding. Lecture.	Selection of Steers for Feeding. Practical work and lecture.
FRIDAY.	Production of Legumes. Lecture. Corn Breeding. Lecture.	Selection of Draft Horses. Practical work and lecture.

REQUIREMENTS FOR THE TEN-DAYS COURSE.

Boys holding scholarships for the ten-days special course *will not be required to wear uniforms or attend any military duties.* They will be given board, lodging and tuition free, but will be required to bring with them pillows, bed clothes and towels and will be required to look after their own rooms.

The course will be open to young men not holding scholarships. Should any such attend the course, they will be required to pay four dollars a week for table board. In all other respects they will be treated as the scholarship students.



SEED CORN GERMINATION TEST.

The covering material has been removed leaving the grains undisturbed in the box. The white roots and sprouts of the germinated grains are seen.

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UNIVERSITY OF ILLINOIS

PRESIDENT'S OFFICE

Maryland Agricultural College Bulletin

OCTOBER—DECEMBER

VOL. 5 1908 NO. 2

The Maryland Agricultural College

COLLEGE PARK, MARYLAND

ISSUED QUARTERLY

Entered at College Park, Md., as second-class matter under Act of Congress, July 16, 1894

UNIVERSITY OF ILLINOIS

PRESIDENT'S OFFICE.

INTRODUCTION

When President Roosevelt's Commission on Country Life met and discussed with representative men from all parts of Maryland the conditions of farm life in this State, the consensus of opinion was that the greatest need is more education. With that thought in mind this bulletin is put forth to direct attention to some of the educational factors in the State and more especially the ten weeks' course in Agriculture and Horticulture offered by the Maryland Agricultural College.

PRESS OF HARRY W. WILLSON, BALTIMORE, MD.

Ten-Weeks' Special Course in Agriculture

BEGINNING WEDNESDAY, JANUARY 6, 1909.

SYNOPSIS OF COURSE

I. SOILS—TWENTY-TWO HOURS

PROF. W. T. L. TALIAFERRO

The examination and classification of soils; the relation of soils to water, air, heat; adaptation of soils to crops; improvement of physical condition of soils; drainage, ventilation, cultivation, green manures, cover crops, rotation of crops.

II. PLANT PRODUCTION — THIRTY HOURS

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peas, clover and other legumes for stock feeding and soil improvement.

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III. AGRICULTURAL CHEMISTRY—TWENTY HOURS

DR. H. B. McDONNELL

Soils; their formation, classification and properties. The mineral constituents of soils and their bearing on plant growth. The best means of supplementing them when needed for plant growth.

IV. MANURES—TWENTY HOURS

DR. H. B. McDONNELL

The best methods of preserving and applying farm manure. The relative value of the different manures and fertilizers. The maintenance of soil fertility. The place of lime in the farm economy.

V. STOCK FEEDING—TWENTY HOURS

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The work in Stock Feeding will cover the principles of animal nutrition, the composition of feeding stuffs, their combination into properly balanced rations, and the relation between the sustenance of animals and their products. The subject will be considered under the following heads:

1. The chemical elements and compounds in feeds.
2. Function of the nutrients.
3. Digestion of food.
4. Cattle foods. Commercial feeding stuffs.
5. The selection and compounding of rations.
6. Feeding growing animals.
7. Feeding for the production of milk, meat, wool, eggs and energy, or work.

VI. FARM LIVE STOCK — TWENTY-EIGHT HOURS

MR. GRANVILLE HIBBERD

Principal breeds of horses, cattle, sheep and hogs; their uses and adaptation; principles and practice of stock breeding; stock judging.

This section includes a thorough course in judging farm live stock, especially dairy and beef cattle. The student is taught by actual handling of the stock and the use of the score card to correctly select animals for different purposes and to accurately gauge their value for their special purpose.

VII. DAIRYING — TWENTY HOURS

MR. GRANVILLE HIBBERD

The dairy instruction will consist of lectures on bacteriology and the necessary precautions to insure a good product; lectures on the obtaining of cream from the milk, comparing the old gravity process and the use of separators; on milk testing with the Babcock test, and the place of the test in modern dairying and on butter making, with the use of the acid test, which practically insures the making of good butter. The lectures on milk testing and butter making will be supplemented by practical instruction, and each student will be required to handle the Babcock test, as well as the separator and the churn.

VIII. FRUIT-GROWING—THIRTY HOURS

PROF. C. P. CLOSE, ASSOCIATE PROF. P. M. NOVIK, MR. W. R. BALLARD

This will consist of lectures upon the selection of land for different kinds of orcharding and small-fruit growing; the propagation, the laying out, cultivation, fertilization, and pruning of small trees, grape vines and small fruits. Practical instruction will be given in seedage, cuttage, layerage, graftage and pruning of all kinds of fruit trees and vines.

IX. TRUCK-GROWING—TEN HOURS

ASSOCIATE PROF. P. M. NOVIK

This is a discussion of our most important truck crops from a commercial point of view. It includes the selection of land, the construction of cold frames, hot-beds and modern green-houses for growing vegetables; the propagation of plants, fertilization and cultivation of truck crops and marketing.

X. VETERINARY SCIENCE — FORTY HOURS

DR. S. S. BUCKLEY

An elementary study of the diseases of live stock should be made by everyone having charge of domesticated animals. Frequently farm animals become a source of considerable loss through neglect

or unintelligent management when out of condition.

While the treatment of sick animals should rest with veterinarians trained in such work, yet the owner or manager must know when such services are needed and how to carry on such treatment intelligently when directed by the veterinarian. The effort is made in the following course of lectures to prepare the student with such knowledge and to enable him the better to understand the bulletins, reports and treatises upon veterinary subjects which he may possess:

1. Nutrition.
2. Diseases due to mistakes in feeding.
3. Infectious diseases.
4. Cattle and their common diseases.
5. The examination of a horse for soundness.
6. Lameness.
7. The foot — its care and shoeing.
8. The use of medicines, and minor operations.
9. Stable sanitation and the prevention of tuberculosis.

XI. TOBACCO — FIVE HOURS

PROF. H. J. PATTERSON

The plant bed, culture, harvesting, curing, marketing and effects of fertilizing elements upon the quality.

XII. PLANT PHYSIOLOGY AND PATHOLOGY FIFTEEN HOURS

PROF. J. B. S. NORTON

Five lectures on the general principles of plant life and structure; how plants live, grow and reproduce, and how they are influenced by different conditions of light, temperature, moisture and other factors in their surroundings, considered with special reference to agricultural problems. Five lectures on the causes, symptoms and treatment of plant diseases, with practice work in examination and study of diseased plants and the preparation and use of remedies and preventatives.

This course will include the discussion of the laws of plant life, the uses and structure of plant parts, nutrition, growth, formation of products by the plant, reproduction by seeds and otherwise, seed testing, useful plants, weeds, poisonous plants, causes of disease, parasitic fungi, preparation of fungicides, and spraying.

XIII. ECONOMIC ENTOMOLOGY — TWENTY HOURS

PROF. T. B. SYMONS

It has recently been estimated that insect injury to agricultural products amounts to over seven hundred millions of dollars each year. It is not only the actual destruction of the crops that causes loss, the effect upon the products may be to reduce the

grade and make them more or less unsalable and unprofitable. These lectures are designed to treat of some of the more common pests that are responsible for this loss, with concise considerations of their life histories and habits and to discuss fully the means for control at our command.

Attention will also be given to the making and applying of insecticides.

XIV. CARPENTRY AND BLACKSMITHING—FIFTY-FIVE HOURS

PROF. HARRY GWINNER

ASSISTANTS, MR. MASON AND MR. CRISP

A knowledge of this is very important to the agriculturist of this day. The equipment for this instruction is complete. The industrious, eager seeker after knowledge will accomplish much in the line of this work in the time allotted.

1. Sharpening of tools.
2. Adjustment of tools.
3. Sawing, planing, chiseling and boring.

Practical lessons in blacksmithing, mechanism and care of forge shop and smith's tools. Preparation of forge for fire. Building and managing the fires and fluxes. Forging, bonding, welding.

XV. FARM ACCOUNTS — TWELVE HOURS

PROF. H. T. HARRISON

A simple, concise and accurate method of keeping farm accounts. Business methods are as necessary

to the successful farmer as to the merchant. Neither can do without a practical knowledge of bookkeeping.

XVI. ROAD CONSTRUCTION AND LEVELING FIVE HOURS

PROF. THOMAS H. TALIAFERRO, C. E., PH.D.

A brief treatment of the principles involved and the methods used in the location, construction and maintenance of country roads.

An opportunity will be given those desiring it to learn the use of the level in laying out drains, etc. Students wishing to take the work in leveling must report to the instructor in charge within two weeks after the opening of the term.

XVII. CIVIL GOVERNMENT — TEN HOURS

PROF. F. B. BOMBERGER

The general principles of government; the rights and duties of citizens and an inquiry into the political institutions of Maryland.

REQUIRED AND ELECTIVE WORK

Each student will be required to take not less than two hundred and fifty hours of work. Two hundred of these must be devoted to the following specified studies:

Soils, 22 hours.
Farm Dairying, 20 hours.
Manures, 20 hours.
Plant Production, 30 hours.
Agricultural Chemistry, 20 hours.
Farm Live Stock, 28 hours.
Stock Feeding, 20 hours.
Horticulture, 40 hours.

The other fifty hours will be devoted to such topics as the student may elect.

Terms: Tuition and room free. No expense for use of laboratories or supplies. Good board at moderate rates can be secured in the neighboring villages of Berwyn, Lakeland, Riverdale and Hyattsville—all within a short distance of the College and Experiment Station. Electric cars make frequent connections. A limited number can be accommodated at the College at $40.00 for the course. Students will be expected to furnish their own bedclothes, pillows, towels, napkins, and overalls for dairy work. *Short course students are not required to drill or wear uniforms.*

The 1903 Horticultural Exhibition

BY

THOMAS B. SYMONS

The horticultural exhibition held in Baltimore, December 1st and 2nd, in connection with the eleventh annual meeting of the Maryland State Horticultural Society may well be considered a horticultural triumph for this State. Indeed, there is no doubt that by this exhibition Maryland has set a standard for horticultural shows that her sister States may proudly imitate. The exhibition was held in the Fifth Regiment Armory, a building containing an open floor space of 60,000 square feet, and said to be the largest of its kind in the country. The

interior decorations of the Armory were simple, but attractive. State and national flags interwoven with smilax and evergreens constituted the decorations of galleries and walls, while masses of evergreens and attractive trade exhibitions tastefully arranged obscured alcoves, supports, etc., around the first floor.

The immense floor space, with the exception of that occupied by the corn-breeders' exhibit, was covered by a general exhibition of fruits, flowers, foliage plants and vegetables arranged in an artistic manner that gave a splendid effect to the whole.

In the centre of the hall stood a large column about fifteen feet high, which was covered by nuts of every kind, many of which are grown in the State, while an appropriate base was filled with fruits of every description, tastefully arranged on its sides. The column supported a large golden eagle, which together served as an excellent centre attraction. Thus the general effect of the show was excellent and the visitor who closely examined the special exhibits was further impressed by their quality.

The fact that this show was accomplished by only one hundred and eighty-eight exhibitors indicates the sincere interest of these horticulturists in the promotion of this industry in the State and the possibilities of such exhibitions in the future. For there has been a steady growth during the past few years in the quality and quantity of exhibits at the show held in connection with the annual meeting of the Society.

FRUITS

The exhibit of fruits, especially apples and pears, was exceptionally good, there being one hundred and nineteen varieties of apples and twenty-six varieties of pears, with a general display of over fifteen hundred plates and twenty barrels and boxes of apples made by one hundred and thirty-one exhibitors. Two exhibits of peaches were unique for this season of the year.

In no department has the educational feature of these annual shows impressed the growers more forcibly than in culture treatment and selection of fruit for exhibition purposes. The majority of the fruit was of exceptional quality, being free from blemishes and scars and of uniform size and color. In fact, it was quite difficult for the judges, who were experienced men, to make the awards in some of the varieties of apples. In addition, this splendid exhibit of apples demonstrated the great possibilities for the growing of this, the "King" of fruits, in all parts of the State. Excellent specimens of the same varieties were shown from the eastern, western and central parts of the State. This display was all the more surprising when it is considered that there was only about twenty percent of an apple crop in Maryland this year, and the season was exceptionally dry.

The exhibit of pears, including twenty-six varieties, eclipsed any previous exhibit of this fruit in the State. The fruit was firm, of good color, and free from blemishes.

The nut exhibit, comprising over twenty-five varieties, attracted much attention, inasmuch as it is not generally known that so many of the best varieties of nuts can be raised in Maryland. The walnuts, pecans,, filberts and chestnuts were of good size and quality.

The exhibit of canned fruits, jellies, preserves, etc., showed the superior handiwork of the feminine sex of Maryland. This, then, is a brief description of the fruit exhibit in the general show.

FLORAL DISPLAY

The display of cut flowers, ornamental foliage plants and hardy evergreens can be considered the best ever made by the florists of the State. The fourteen exhibitors showed a large number of different varieties of cut flowers and foliage plants, including sixteen varieties of roses, eleven varieties of carnations, and eighteen varieties of chrysanthemums and many different flowering foliage plants. These exhibits were tastefully arranged in the centre of the hall, adding much to the attractiveness and beauty of the exhibit. Too much cannot be said of the great ability of many of our Maryland florists to produce new creations in flowers. No State in the Union can boast of more elegant roses than John Cook has given to the trade. His latest introduction, "My Maryland," bids fair to rival any rose of the country in its class. Indeed, a summary of the work of Maryland florists would be a monument to the State.

The general exhibit of flowers and plants was highly commendable, and the keen interest displayed by the florists in the decision of the judges illustrates the very marked attention that these growers give to the production of our finest flowers.

The large groups of ornamentals displayed not only artistic arrangement, but served as excellent backgrounds for the floral and fruit exhibits, which added much to the effect of the show.

VEGETABLES

While the vegetable display was very creditable and one of the largest ever made in connection with the meeting, there being thirty-seven exhibitors and over one hundred and fifteen different varieties of truck crops, yet it may be said that this phase of the Horticultural Exhibit has not assumed the proportions that are due the importance of this industry in the State. The quality of the vegetables surpassed similar exhibits, showing the adaptability of Maryland soils to produce the best of many kinds of vegetables. The fine cauliflower exhibit, which was grown in Garrett County, and the splendid exhibit of sweet potatoes from Queen Anne's County served as surprises to many visitors.

MISCELLANEOUS EXHIBITS

There were a number of miscellaneous exhibits of more or less educational value, viz., the honey and live bee exhibit, the exhibit of the Departments of Entomology and Pathology of the Maryland

Agricultural College, the various nursery exhibits, etc., etc.

The honey exhibit comprised a large quantity of comb and extracted honey, shown advantageously; also samples of wax made in different forms. The live bees shown in special exhibition hives attracted much attention. While creditable for the first attempt at an exhibit of this character at the horticultural meeting, this industry of the State is capable of much greater display, for the State as a whole is especially adapted to apiculture.

The exhibits showing the common injurious insects and plant diseases were of peculiar interest to growers and visitors. Here could be seen the common insect pests of the orchard and field and samples of injurious forms of plant diseases. Such exhibits are of much value from an educational standpoint.

Several nurserymen in the State made attractive displays of their products in trees and ornamental stock, thus giving purchasers an opportunity to observe the character of nursery stock grown in this State.

TRADES EXHIBIT

The exhibits of many manufacturers of spraying apparatus and insecticides, of seedsmen and general salesmen of fruit growers' and bee keepers' supplies add much to the educational features of such an exhibit. The growers are able to observe the up-to-date apparatus for the culture, treatment and har-

vesting of crops, and are able to select such machines or materials as are best suited to their needs. The trades exhibits at this show were especially complete and attractive in setting.

CONCLUSION

Thus the 1908 Horticultural Exhibition passes into history, but its effect upon the horticulture of the State will be more pronounced than any previous exhibiton of the Society. The attendance at the meeting and show was greater than ever before, and the growers evinced much more interest in the awards, showing their appreciation of the educational value of such exhibitions.

The realization of the fruit growers, truckers and florists of the State of the importance of proper culture and treatment of plants for the control of insect pests and plant diseases in order to produce clean, sound products—such as for the most part were exhibited at this show—and a greater amount of attention given by them to the packing and disposing of their crops, linked with the natural opportunities that the State affords, bids fair to place Maryland in the lead of her sister States in producing horticultural products.

Finally, what has been accomplished by one hundred and eighty-eight exhibitors indicates the possibilities of such horticultural exhibitions in the future in this State, as the increased interest manifested leads us to anticipate the co-operation and support of all the horticulturists in the State toward the

success of this worthy cause. The State has reason to be proud of these public-spirited citizens, especially as their products were of such a character as to justify the sending of a large exhibit of fruit to compete for prizes at the exhibit held in connection with the National Horticultural Congress, Council Bluffs, Iowa.

Great credit is also due the officers of the Maryland Horticultural Society for their untiring efforts in making the eleventh annual meeting and exhibition such a pronounced success.

What Could Be Learned at the Meeting of the State Horticultural Society in Baltimore

BY

P. M. NOVIK

On the first two days of this month (December) the Maryland State Horticultural Society held its annual meeting and show of horticultural products in the Fifth Regiment Armory, Baltimore.

From a small and unimportant beginning, these meetings have been worked up to be the greatest annual event in agriculture in our State.

Only two years ago, when the Society held its first meeting at the Armory, the show occupied only a small space in the middle of the floor; at the recent meeting the exhibit occupied every foot of the floor space, and if it continues to grow from

year to year we will see this immense hall crowded.

Held in the Armory the same week that the Society met was the Maryland Cereal and Forage Crop Breeders' Association; the Maryland Bee Keepers' Association, the Farmers' League of Maryland, and the State Grange.

It is characteristic of Maryland that the horticulturists are in the lead, since when and where the horticulturists meet all the other societies relating to rural life come together for their meetings.

From her very nature, Maryland is a horticultural State. With her large range of differing soils, and different elevations from the tidewater lands of the Eastern Shore to the mountainous section of Western Maryland, it is possible to grow a larger range of crops here, perhaps, than in any State of equal size.

Surely our horticultural industries are prosperous! We put up more canned vegetables than any other State in the Union, in addition to supplying the large cities of Baltimore and Washington with fresh products. For several weeks every year the prices of strawberries and peaches in the Northern markets are determined by the size and quality of the Maryland corp; and, were it not known before, it was proved by the show in the Armory that we both can and do grow apples unsurpassed by any.

But, although our horticultural industries are prosperous, yet still we have much to learn. All horticultural industries today are business concerns. It is not enough to grow fruit and vegetables, but

we must grow the very best kind in the most economical way. Only the farmer who has made a scientific study of the features of this industry can raise and sell crops with all the benefits which should accrue to him.

Now the average tomato crop of Maryland is not more than five and two-tenths tons to an acre, while every grower knows it should be at least seven tons. What are then the reasons for this small crop? Why are the returns from the tomato fields growing smaller every year?

Or, to take an example from the last show in Baltimore: How is it that all farmers agree in reporting a small cabbage crop, while the Maryland Agricultural Experiment Station exhibited finer cabbages than they ever had before?

These are problems well worthy of a thorough study. In the case of the tomato crop, some of the difficulties may be easily overcome. Crop rotation and spraying will solve the problem, but with cabbage it may be more difficult to trace the cause.

For the observing fruit-grower there were many things to learn at the show in Baltimore. The main part of the fruit exhibit was composed of only a few varieties. How these varieties are selected is a wonder for the uninformed. They are not always the best varieties by any means. For example, the "York Imperial" is one of the most commonly grown varieties of apple in the State. Certainly not because it is a very fine apple, for it is not. But, the tree is a strong and healthy grower; it bears well

and annually, and the fruit is easy to pack and store, and when the consumer wants it and is willing to pay for it, that is all the fruit grower can wish of an apple variety. It is of no importance to the commercial fruit grower whether he himself likes the fruit he grows or not; all the grower has to do is to supply the consumer with the kind he wishes to buy. It should, however, be added that some of the apples we grow on a large scale are the best you can get anywhere. "Grimes," "Stayman," "Gano" and "Stark" are good examples of apples which it has been proven it pays to grow in Maryland.

Perhaps the fruit growers learned most from the scoring and judging of the fruit on this occasion. Several of our best fruit growers spoke very freely of how much they had learned at this meeting on this one point.

The judges were especially severe in scoring down fruit that had not been sprayed properly. In fact it was almost impossible to get prizes for apples on which there appeared the slightest sign of insect or fungus attack.

Next in importance the judges considered uniformity of size, form and color, and this, together with freedom from blemishes, brought first premiums.

It was proved at this meeting, as it has been proved before, that it is only the expert fruit grower who can grow perfect fruit, but even he cannot always select and grade his apples as well as might have been expected.

Fruit growing is a very complicated industry, be-

ginning with the selection of ground and planting, and continuing with pruning, cultivating, cropping, spraying, harvesting, grading, packing, storing and marketing.

Each one of these steps in the work has to be paid proper attention to, if the goal of success is to be reached.

An important part of the show at the Armory this year was the spraying outfits exhibited. A more complete set of spraying machines has, perhaps, never been seen in Maryland. Many a farmer there found out that his spraying machinery was not up to date any more.

The old barrel spray pump gave a very poor impression beside the more modern rigs, with a ten-foot-high tower to spray from.

Second Annual Exhibition of the Maryland Grain and Forage Crop Growers' Association

BY

W. T. L. TALIAFERRO

The grain farmers of Maryland, as well as the horticulturists, have reason to feel proud of the display made at the late joint exhibition at the Fifth Regiment Armory in Baltimore. The distinct improvement in the quality of the grain shown, especially in corn, was noticeable at a glance and was the subject of universal comment.

The educational effect of the Corn Show of 1907 has evidently been far reaching. After the awards had been made, the judges for practically all the remainder of the show stood by the tables and explained to hundreds of growers the points involved in the decision and reasons which influenced their judgment. Few of the exhibitors had had their attention directed in such a detailed way to the good and bad points of corn, and there was much discussion as to the respective merits of different types and varieties, and the methods by which improvement might be made.

That these discussions were not fruitless was clearly shown at the 1908 exhibition. It was at once evident that the exhibits had been selected with far greater care than before and represented more sharply defined ideals on the part of the exhibitors. In no way was this more clearly shown than in the greater uniformity of the exhibits within themselves.

Another good sign in the late show was the large number of exhibitors who wished to have their exhibits returned. The exhibitors of 1907 apparently did not as a rule think ten ears of corn worth return expressage. In the recent show it was different. A majority of the exhibitors had evidently put time and care into the selection of their corn. It was the best they had, and they wished to have it back for seed, even though it cost something to get it.

The splendid show made by Talbot and Howard Counties in the corn exhibit received unstinted praise on all sides, and illustrated admirably how important a factor local enterprise is in such undertakings. Public-spirited citizens of Talbot subscribed fifty dollars for special county prizes, and almost the entire exhibit from Howard was sent over by the Ellicott City Board of Trade, after being first shown at their annual corn and poultry show.

The enterprise shown by these counties is most commendable and well worthy of imitation.

The corn shown by Mr. J. T. Hoopes, of Harford County, which won the sweepstakes prize, was a white corn of splendid quality. The grains were

deep, firm and fully matured. The ears well shaped, and of as large size as can be counted on to mature in our climate. The average weight was one and one-tenth pounds. Mr. Hoopes is one of the charter members of the Corn Breeders' Association, and has been making a close study of corn breeding for a number of years. Yet, had the season on the Eastern Shore been more favorable, the cup might have crossed the bay again.

The small-grain exhibits, though small in number, were excellent in quality, especially the wheat. Fine samples were shown of oats, rye, barley and buckwheat. Several of the exhibits of small grains were given by the judges lower grades than they otherwise would on account of admixture of weed seeds, damaged grain or other varieties. The exhibitor of small grains cannot be too careful in selecting a pure, clean sample.

The annual show of the Maryland Cereal and Forage Crop Breeders' Association has demonstrated its usefulness as a factor in the improvement of our staple crops, and should command the support of every citizen interested in the welfare of the State.

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The Maryland Agricultural College Bulletin

SHORT COURSES

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IN

AGRICULTURE,
HORTICULTURE,
POULTRY HUSBANDRY,
DOMESTIC SCIENCE,

JANUARY 5TH TO MARCH 14TH, 1914.

ISSUED QUARTERLY BY THE
MARYLAND AGRICULTURAL COLLEGE,
COLLEGE PARK, MD.

Entered at College Park, Md., as Second Class under Act of Congress, July 16, 1894.

MARYLAND'S POSSIBILITIES

The net return from her 50,000 farms should be doubled.

Her two millions of acres of uncultivated and swamp land could be increased in value tenfold.

Her average yield of corn could be increased two barrels per acre, and this would give to the farmers nearly four million dollars more per year.

One pint more milk per cow per day would give the dairymen over one million dollars more for their labor each year.

Unused hill land could be turned into pastures that would feed at least a half million sheep.

Maryland can be made the greatest fruit State in the East. Land suitable for orchard fruits that now sells for $10 to $30 per acre can be made worth $150 to $300 per acre.

OTHER CROPS CAN BE DEVELOPED PROPORTIONALLY

Maryland's soil, climate and location are exceptionally well fitted for growing food for man. She has ten million consumers in the cities and towns located at her doors.

NO STATE IN THE UNION HAS AS GOOD MARKETS

The consumers should pay less for food and the producers get more for their products than at present. Co-operation between buyer and seller will make this possible.

More profit in farming will attract settlers and increase land values.

The water-power that is going to waste on thousands of Maryland farms should be harnessed and made to lighten and do much of the farm labor.

Maryland should rank first as a state of prosperous farms and pleasant homes.

Her 200,000 growing boys and girls are entitled to as good educational facilities as other States provide for their children. They should be trained to make the most of these possibilities.

The first-class equipment of your Agricultural College for education, investigation and the demonstration of these possibilities would be the greatest factor the State could have for bringing about these desired results.

LET US HAVE A GREATER STATE THROUGH A GREATER AGRICULTURE, AND A GREATER AGRICULTURE THROUGH A GREATER AGRICULTURAL COLLEGE.

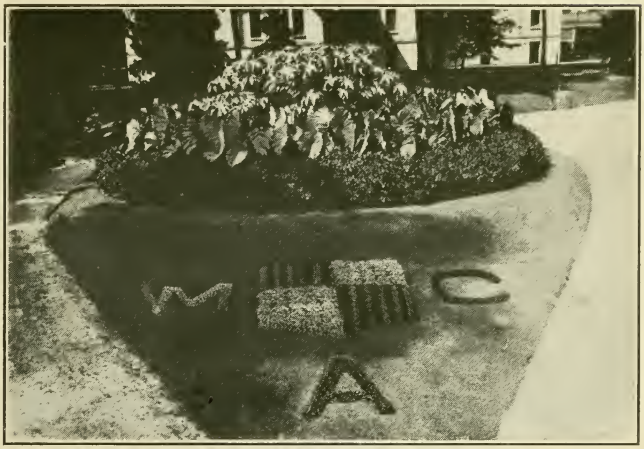
Welcome

To Your Agricultural College

"The trained man will lead in all great enterprises. I would advise every young man if possible to obtain a college education, a SHORT COURSE, if nothing more, to gain the college spirit."—Collingwood.

YOU are cordially invited to attend the free short courses offered this winter at your Agricultural College for busy farm men and women. These courses are on the subjects of Farm Crops, Soil Fertility, Live Stock Management, Dairying, Farm Mechanics, Fruit Growing, Vegetable Gardening, Poultry Keeping and Domestic Science.

As instructors in these subjects, the College has, beside its regular teaching force, a considerable number of practical experts from Maryland and adjoining States who have made a pronounced success of their specialties.



Welcome To Your Agricultural College

This gives to the Maryland farmer, his wife and grown boys and girls an unequaled opportunity for securing in a nut shell of cost and time, the *meat* of practical experience and up-to-date methods in the various kinds of farming and home-making in which they are especially interested. The knowledge thus gained is intended to be put to immediate use in the work of the farm and home, lessening its drudgery and increasing its returns. No investment is likely to prove more worth while to you in yielding profits throughout the entire year than a winter's vacation spent, by yourself

or some member of your family, in attending one or more of these short courses.

No farmers are more loyal to their Agricultural College, or more appreciative of the advantage she offers, than those who, as students, have taken her short courses. To them is given a great opportunity for making known to their friends and neighbors the mission of the Agricultural College, which is to see that no furrow is left unturned or neighborhood left unvisited, that is capable of greater production or a fuller life.

Additional information and copies of this booklet for distribution will be gladly furnished you on request.

H. J. Patterson

President.

College Park, Md.

On Your Way

Short Courses, 1914

Soil and Fertilizers	January	5-10.
Farm Crops	"	12-17
Domestic Science	"	12-17.
Poultry Husbandry	"	19-24.
Horticulture	"	26-February 7.
Animal Husbandry	February	9-28.
Farm Machinery and Farm Engines	March	2-7.
Farm Carpentry and Blacksmithing	"	9-14.

Location and Connections

The Maryland Agricultural College is located at College Park, on the Baltimore and Ohio Railroad, between Baltimore and Washington, forty minutes by trolley from the United States Department of Agriculture, the Congressional Library, and the Government Experiment Farms.

Short Course Headquarters

Adjoining the College grounds are the Agricultural Experiment Station and Farm. Here, in the Biological Laboratory Building, are located the headquarters for the Short Courses, the main lecture hall, and a demonstration room for killing, dressing, packing, etc. These rooms are floored with cement, and are commodious enough to allow of machinery, stock, etc., being brought in for study and examination, regardless of weather conditions.

Class Rooms

The lecture rooms, laboratories and new greenhouses of the College are offered freely for the use of short-course students, as guests of the College and the regular student body.

Library and Reading-room

The College library is open daily, and students are encouraged to consult books bearing upon their subjects of study. The privileges of the College reading-room are also extended to them.

Dairy Barn

A complete set of dairy barns, housing a fine herd of pure-bred Ayrshires and Guernseys, demonstrates the latest methods of dairy management. Especial attention is invited to the valuable features of the Open Dairy Barn, original with our Experiment Station.

Accommodations and Cost

Instruction is free. Board may be had in College Park, or in the adjoining trolley-connected towns of Hyattsville, Riverdale or Berwyn, at about $5.00 a week for board and lodging. All persons planning to attend these courses should write us promptly, so that proper accommodation can be secured.

Dairy Barns

Soils and Manures

January 5 to January 10

W. T. L. Taliaferro
Grover Kinzy

THIS course deals with soils, their properties, and how to care for them and make them more productive and fertile. Their relation to water, air, and heat; their adaptation to various crops; their need for drainage; crop rotation, the proper application of manure, fertilizers, and lime are all discussed.

The presence of bacteria in soils is given attention from the standpoint of soil building. Their relations to the decomposition of organic matter, to the fertility of the soil, to leguminous plants, and to the rotting of manure are explained. In this connection a new soils laboratory gives the student an excellent opportunity to study the physical properties of the different kinds of soils.

Experiment Station Wheat Field

Instruction is given in the home mixing of fertilizers for best results. Every effort is made to direct the student toward ways and means of enriching his soil economically, and managing it to produce profitable crops while improving it.

Farm Crops

January 12 to January 17

W. T. L. Taliaferro
Grover Kinzy

Special Lecturer:
Nickolas Schmitz, Maryland Experiment Station.

FARM crops suited to Maryland conditions, their classification, adaptation to soil and climate, and various methods of culture form the subject matter of this course.

Their relations to the elements contained in the air and soil are discussed. Explanation is given of how a plant feeds, and of the food products it yields. Questions like, "What is my land good for?" "What can it best produce?" are asked and answered as correctly as possible.

Corn and Alfalfa

Attention is given to seed selection, the judging of grains, and the planting of improved varieties. Special lectures are devoted to corn, wheat, oats, alfalfa, clovers and forage crops. The preparation of land for these crops; their cultivation and harvesting, with a view to economical production and the saving of labor waste are taken up thoroughly.

Weeds, their nature and how to get rid of them; insects and diseases affecting farm crops are included. After many years' experience, the farmer may have learned already much of what is taught in this course, but he is sure to find out many things that he does not know, and which he cannot afford to waste time in discovering for himself.

Domestic Science

January 12 to January 17

THE Domestic Science Courses given in previous years have been highly successful in the interest aroused among the women of the State, in the high grade of instruction given, and in the appreciative and ready spirit in which this instruction has been received.

Instructors.

Mrs. E. P. Foulk, Professor of Home Economics, Ohio State University; Dr. Martha B. Lyon, Washington, D. C.; Dr. C. O. Appleman, Maryland Agricultural Experiment Station; Miss Emma L. Jacobs, Director of Domestic Science in the Washington Public Schools, and many others, have been engaged for lectures and practical demonstrations in all branches of housework and home-making.

Subjects of Study.

The Household—The Care of Babies, Bacteriology, Household Chemistry, Home Nursing, Bandaging, Ventilation, Cleaning, the Disposal of Waste, House Furnishing.

The Kitchen—Selecting Meats and Vegetables, Food Values, Care of Milk, Planning Meals, Cutting up Meats, Cooking, Canning of Fruits and Vegetables and the Fireless Cooker.

Clothing—Fibres and Textiles, Sewing and Dress Planning.

Visits will be made to the College Buildings, where we hope to educate your boys and, in the near future, your girls in better farming and home-making; to the Experiment Station and Poultry Plant, where we are engaged in discovering better methods and demonstrating them to our people, and to the Dairy Barns, where we are learning and teaching how to produce the purest of milk for the babies of Maryland, both of country and city.

A Maryland Shepherdess

Note: The College 'bus will each morning meet the 9.00 o'clock trolley from Washington and the 9.10 o'clock trolley from Laurel. In the afternoon the 'bus will carry passengers from the college to meet the 5.10 and 5.30 trolley cars.

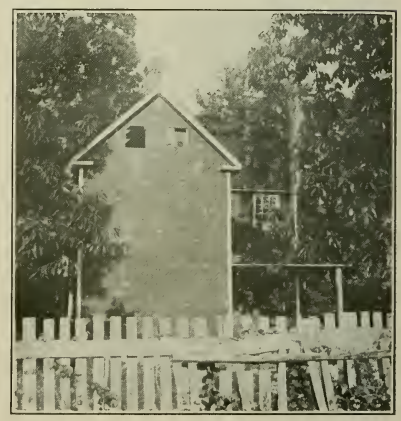
The Farm Home

NO HOME can be made brighter or more comfortable than the farm home of Maryland. No woman should be happier than the woman who is daily occupied in creating such a home and in rearing her children in it. She is no longer content to view the outdoors through a darkened kitchen window or to be denied a friendly visit, or possibly a pleasant week or two at her Agricultural College, taking a course that will help her with her chickens or her home duties.

Real Comfort

Give her a chance to stay young. Let her have her chickens, her garden, her flowers. Let her have friends to visit her occasionally and a horse to drive. Let her have a little time for rest. Let her, above all, be happy in her home building. Let her bring air and sunshine into the old farm house. Let her screen it against the discomfort of flies and mosquitoes and the deadly diseases they carry. Let her make it comfortable and beautiful, a place to cling to, and love all through life.

Let us see what can be done. Take our first illustration—"a house." Note its east side—the side that should be open to the morning sun—closed against both light and air. See the old ramshackle fence in the foreground. On the back porch notice the well and buckets that have to be hauled up and lifted. The only redeeming feature is its location under the chestnut trees.



"A House"

See the same house in the second picture—now "a home." Sunshine and air have been let in. A bay window on the first floor has made possible a cosy living room. Two windows upstairs invite pure breathing and early rising. A front porch gives the house a look of welcome and hospitality. The back

porch roof has been removed and a small bathroom built out over it. In this bath-room is a home-made bath-tub and running water. An inexpensive gasoline engine and pump have replaced the old-fashioned well. This engine also runs the washing machine and cream separator. The piping for water was done by the farmer himself with a very simple outfit, and the few hints that he picked up in a farm mechanic's short course. On the edge of the porch is built a dry dirt closet convenient in all kinds of weather, absolutely sanitary, and easily cared for. As a finishing touch, English ivy or ampollopsis, found growing wild on the place, has been trained over the porch and bath-room, and in three years has covered all the space available.

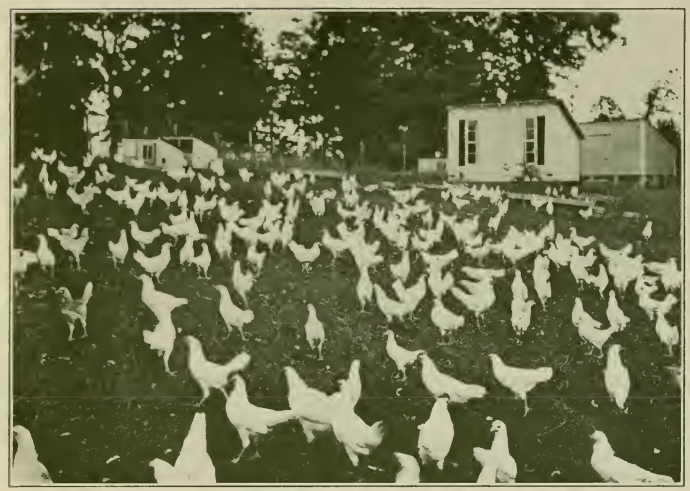
Other changes inside and out have been made from time to time. These have been neither costly nor difficult to bring about. By their help, a woman has made out of this house a bright, cheerful place in which to *live*, as well as to eat and sleep. Did not her education in better home-making pay?

"A Home"

Poultry Husbandry

January 19 to 24

Roy H. Waite.



Maryland Money Makers

This course is designed for the busy poultry keeper now engaged in the business, the beginner, and those who are thinking of taking up chicken raising. It is very obvious that we cannot make finished poultry raisers from novices in the short period of one week, but past experience has shown that those in the above class can be greatly benefited. In fact, the object of the course is not so much to develop poultrymen who can go out and run a poultry plant from the start, but to get the student to thinking for himself.

The poultry keeper who has time and inclination for taking the course will be amply repaid by a review of the subject; new facts of interest will come up, and he will be mingling with an enthusiastic "chicken crowd."

The beginner cannot help but reap a rich harvest of information that will help to save hundreds of dollars that might otherwise be wasted in mistakes or needless experiments to learn facts that are already well known and established.

The course is of especial value to the victim of "chicken fever," who is undecided as to whether or not to enter the field of poultry production. Many persons start in with very erroneous ideas as to the amount of attention required and the profits expected. They are misled by the great stories of success in the business so often told.

Full details of the subjects for discussion and demonstration, together with the special list of poultrymen engaged as teachers, will be found in the poultry course folder, to be had for the asking by all poultry keepers.

Horticulture

January 26th to February 7th

T. B. Symons, Dean.

Assistants:

H. Beckenstrater, E. N. Cory, B. W. Anspon, J. F. Monroe, C. P. Smith, L. E. Burrell

Special Lecturers:

J. B. S. Norton, C. P. Close, W. P. Ballard, F. S. Holmes, T. H. White, and many others.

THE aim of the two-weeks' course in horticulture is to discuss and demonstrate the most practical methods of meeting successfully the various problems which confront the fruit grower, the vegetable gardener, and the owner of the home acre.

Orcharding—Lectures are given on fruit varieties adapted to Maryland's soil, climate and markets, the selection and planting of young trees, the cultivation and feeding of the growing orchard, the protection of both the trees and their fruit against insects, pests and diseases. Special talks are given by practical authorities on apples, pears, peaches, plums, cherries and bush fruits. Their picking, packing and methods of marketing are given much attention, as being quite as important as their successful production.

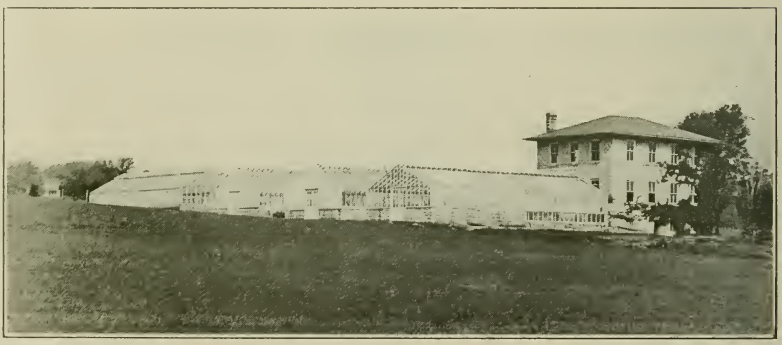
Maryland Week Exhibition

Students Pruning

Vegetable Gardening—The second week is largely occupied with seed selection, and the preparation of the seed bed for vegetables. The truck crops, such as potatoes, sweet corn, tomatoes, peas, cabbage, etc., are treated separately by experienced growers.

Demonstrations are a strong feature of this course. Much time is given to the illustration of methods of budding, grafting and pruning; of spraying and the preparation of insecticides and fungicides; of the grading and packing of fruit; cold-frame and hot-bed construction are also taken up.

The Home Acre—Its needs and possibilities in cutting down the living expenses of both farmer and suburbanite are given especial consideration. The home orchard and garden should be given the first attention over any other part of the farm. The home surroundings should be made beautiful and attractive. Not only should the home acre be developed on every farm, but wherever there is a house and a piece of ground there should be a garden and fruit trees. In the "backyard farms" of the outlying districts and suburbs of our towns and cities lies great hope for better living conditions, and healthier and happier children.



Experiment Station Greenhouses

Farm Live Stock

February 9 to February 21

R. H. Ruffner,

S. S. Buckley, Veterinarian.

Assistants in Sheep and Swine:

C. L. Opperman, R. S. Allen, Reuben Brigham.

THE course in farm live stock is especially planned for those who wish to raise superior live stock with economy and success. The best farming requires the keeping of farm animals, and the amount of profit obtained is directly proportionate to the number of animals kept and the degree of attention they are given. We believe, therefore, that every legitimate means of encouragement should be brought to bear upon the Maryland farmer in making Maryland a State noted for her live stock interests, and the breeding of her own high-class strains of farm animals.

A Busy Day

With this end in mind, we offer as a part of this course the study of breeds, the judging of horses and cattle for soundness, condition and type, and the general principles of live stock breeding.

Thousands of dollars are spent by Maryland farmers each year in the unnecessary purchase of expensive feeds. Special emphasis is laid on the economical and rational feeding of all farm animals. Instruction is given in working out balanced rations from feeds available on individual farms and in different localities.

A Happy Porker

We endeavor to teach each student how to buy a good feeder. Fat cattle, hogs and lambs will be slaughtered for market in our large demonstration room. The more profitable marketing of fattened stock and the selection and handling of meats for home and neighborhood consumption will be touched upon.

The hot-house lamb industry, its present standing and possibilities for development in many sections of Maryland, will be featured. To this end the services of two experienced growers of winter lambs have been secured, and their experience should prove most interesting to prospective sheep owners.

Students will have an opportunity to inspect the anti-hog cholera serum plant at the Experiment Station. A demonstration of the serum treatment will be included in the work of the course.

Bred from Our Herd

Maryland Boys Judging at Chicago

Dairying

February 21 to February 28

R. H. Ruffner,
S. S. Buckley, Verterinarian.

Experiment Station Assistant:
G. E. Wolcott, Dairy Extension.

THE dairy industry in Maryland is of much greater magnitude than is apparent to the average observer. The most reliable figures available at the present time place the total number of dairy cows in Maryland at 166,859, with a farm value of more than $6,000,000. This represents more investment than all the meat cattle of the State, together with its hogs and sheep. It is an industry that tends to intensify farming methods. It is one of the factors which enters most strongly into the great question of conserving soil fertility.

There are two directions in which much improvement can be made, namely, in raising the annual production of our cows and in improving the quality of our dairy products. The first is the more important. Could the annual product of the Maryland cow be advanced a few pounds of milk or butter per year, it would bring greatly increased returns to our producers.

Certain sections of Maryland are well fitted for dairying, and in such localities the industry should be encouraged as much as possible.

During the brief time allowed for dairy instruction, the following subjects will be discussed: the judging of dairy cows, dairy breeds and types, co-operative breeding and testing, the building of silos, feeding for economic production, types of dairy barns, dairy sanitation, effects of dairying on the soil. Excursions will be made to the Government Breeding Farm, at Beltsville, and to the Soldiers' Home Dairy, Washington, D. C.

Our Dairy Herd

Farm Machinery and Engines

March 2 to March 7

W. T. L. Taliaferro.

THE study of farm machinery and motors in this course is intended to familiarize the student with the construction and use of various implements and machines required in meeting modern farm conditions and in solving the labor problem. The gasoline engine and its adaptability to a wide variety of service will be thoroughly demonstrated.

Carpentry, Blacksmithing, Pipe Fitting

March 9 to March 14

Harry Gwinner, H. L. Crisp.

This is a most valuable course for the average farmer. He can save much by sharpening and fitting his own tools, and by knowing when this work has been done properly.

Carpentry—A handy thing for the farmer to have is the ability to plan and construct his sheds, outbuildings, and the many appliances about the farm that need to be kept in repair.

Forging—A small forge, and the knowledge necessary to do some of his own iron work at odd times, such as making open links, chain welds or temporary machine repairs is often worth a great deal. Many a farmer in one of his rush seasons has had to lose three or four hours of the best part of his working day in making a hurried trip to the nearest blacksmith shop, wasting both time and money.

Pipe Fitting—Knowing how to lay pipe and make sound connections is something that every enterprising farmer will find of use in supplying the house, barns and garden with water.

Doing It Right

Editorial from the Rural New Yorker, August 30th, 1913:

Several of the agricultural colleges are issuing very striking advertising in the way of pamphlets and cards. The Maryland College, following Colorado, prints on a card with other facts about the College:

MARYLAND WILL NEED IN THE NEXT TEN YEARS

50,000	Successful Farmers.
10,000	Live Stock Breeders.
10,000	Orchardists and Fruit Growers.
2,000	Expert Dairymen.
1,000	Mechanical Engineers.
500	Civil Engineers.
500	Highway Engineers.
500	Electrical Engineers.
200	Agricultural Engineers.
300	Chemists.
300	Teachers of Agriculture.
1,000	Science Teachers.
300	Teachers of Manual Training.
300	Travelling Inspectors.
150	Experiment Station Workers.
150	Field Demonstrators.
100	Foresters.

Why not fit yourself for one of these positions?

It is true that Maryland will need every one of the 77,300 persons here mentioned, and more besides. Each one of those trained men should also be a good citizen, with unselfish views of public life, willingness to work with his hands, if need be, and able to realize that the common people paid for his education, and thus represent his creditor. Does the college turn out such men? The Maryland farmer who writes the following evidently does not think so:

> Agricultural college lads only do head work. I have tried them and they always fail. These colleges are for the production of millionaire's menials.

This man is wrong in this sweeping statement. We know many college graduates who are doing sensible and practical work on the farm. It is true that there are some "millionaire's menials" who received their training at the agricultural colleges. Every college turns out a proportion of graduates who go about as very poor advertisements for the institution. If we condemn the college for its poorer samples, we should also give it credit for its high-grade goods. We have faith in our agricultural colleges, for sooner or later OUR WORKING FARMERS WILL LEARN HOW TO CONTROL THEM, AND MAKE THEM DO THE WORK WHICH IS REQUIRED.

FARMER BOY OR GIRL, SUCCEED!

BE A LEADER IN YOUR NEIGHBORHOOD.

Make the best money earned today by fitting yourself as a well-paid producer on your home farm. Your profession demands a live, up-to-date business education. Spend your winter vacation with practical and paying results. Attend the *free* short courses in dairying, fruit growing, poultry keeping, home making, and better farming at

YOUR AGRICULTURAL COLLEGE,

COLLEGE PARK, MD.

1914 Short Courses, January 5 to March 14.

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VOL. 11 SEPTEMBER, 1914. No. 4

The Maryland Agricultural College Bulletin

SHORT COURSES

IN

AGRICULTURE, HORTICULTURE, POULTRY HUSBANDRY, DOMESTIC SCIENCE.

JANUARY 4TH TO MARCH 13TH, 1915.

Issued monthly excepting the months of November, December, January and February. Entered at College Park, Md., as Second-Class Matter under Act of August 24, 1912.

MARYLAND'S POSSIBILITIES

The net return from her 50,000 farms should be doubled.

Her two millions of acres of uncultivated and swamp land could be increased in value tenfold.

Her average yield of corn could be increased two barrels per acre, and this would give to the farmers nearly four million dollars more per year.

One pint more milk per cow per day would give the dairymen over one million dollars more for their labor each year.

Unused hill land could be turned into pastures that would feed at least a half million sheep.

Maryland can be made the greatest fruit State in the East. Land suitable for orchard fruits that now sells for $10 to $30 per acre can be made worth $150 to $300 per acre.

OTHER CROPS CAN BE DEVELOPED PROPORTIONALLY

Maryland's soil, climate and location are exceptionally well fitted for growing food for man. She has ten million consumers in the cities and towns located at her doors.

NO STATE IN THE UNION HAS AS GOOD MARKETS

The consumers should pay less for food and the producers get more for their products than at present. Co-operation between buyer and seller will make this possible.

More profit in farming will attract settlers and increase land values.

The water-power that is going to waste on thousands of Maryland farms should be harnessed and made to lighten and do much of the farm labor.

Maryland should rank first as a state of prosperous farms and pleasant homes.

Her 200,000 growing boys and girls are entitled to as good educational facilities as other States provide for their children. They should be trained to make the most of these possibilities.

The first-class equipment of your Agricultural College for education, investigation and the demonstration of these possibilities would be the greatest factor the State could have for bringing about these desired results.

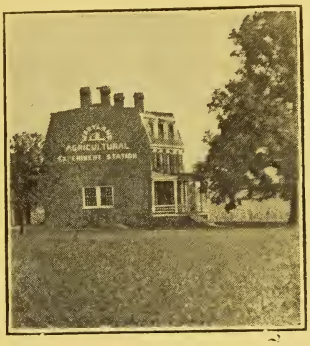
LET US HAVE A GREATER STATE THROUGH A GREATER AGRICULTURE, AND A GREATER AGRICULTURE THROUGH A GREATER AGRICULTURAL COLLEGE.

Your Agricultural College Greets You

"The trained man will lead in all great enterprises. I would advise every young man, if possible, to obtain a college education, a SHORT COURSE, if nothing more, to gain the college spirit."—Collingwood.

IN ANNOUNCING its Short Courses for the winter of 1915, your Agricultural College calls your attention to the fact that the Institution is an investment of the State in your behalf, and presumably operated for your profit and benefit. Whether or not you reap much direct benefit from its activities and the opportunities it offers you for helping yourself, depends entirely on how closely you interest yourself in its work and teachings.

To secure a living and profits from the soil, you have to cultivate it and study what it has to offer you. To secure from your Agricultural College help in making a living and in securing profits from it as an investment in your behalf, you must cultivate the acquaintance of its teachers and investigators and study what they have to offer you. Then, if your soil, or your Agricultural College—either of them—are not making you the returns that in your judgment they should be, you can intelligently criticize and correct the present methods of handling them so that they will yield you the profit and the benefits they should.



Headquarters.

We know of no better way for you to secure this information, or of anything more genuinely helpful to the busy farmer or farm woman or their growing boys and girls than attending all or part of the ten-weeks' winter session at the College, beginning January 4th. These courses are on the subjects of farm crops, soil fertility, livestock management, dairying, farm mechanics, fruit growing, vegetable gardening, poultry keeping and domestic science. As instructors in these subjects, the College has, beside its regular teaching force, a considerable number of experts from Maryland and adjoining States, who have made a

pronounced success of their specialties. Thus, in a nutshell of cost and time, you have the opportunity to secure the very meat of practical experience and up-to-date methods in the various branches of farming and home-making in which you are especially interested, or in which you feel the need of help.

Can you not see it to your interest to be with us this winter and see for yourself what profits your Agricultural College can be made to yield to you, personally and to your community?

Short Courses, 1915

Soil and Fertilizers	January 4- 9.
Farm Crops	January 11-16.
Domestic Science	January 11-16.
Poultry Husbandry	January 18-23.
Horticulture	Jan. 25-Feb. 6.
Animal Husbandry	February 8-27.
Farm Machinery and Farm Engines	March 1- 6.
Farm Carpentry and Blacksmithing	March 8-13.

Short Course Class of 1914, Poultry Section.

General Information

LOCATION AND CONNECTIONS

The Maryland Agricultural College is located at College Park, on the Baltimore and Ohio Railroad, between Baltimore and Washington, forty minutes by trolley from the United States Department of Agriculture, the Congressional Library, and the Government Experiment Farms.

SHORT-COURSE HEADQUARTERS

Adjoining the College grounds are the Agricultural Experiment Station and Farm. Here, in the Biological Laboratory Building, are located the headquarters for the Short Courses, the main lecture hall, and a demonstration room for killing, dressing, packing, etc. These rooms are floored with cement, and are commodious enough to allow of machinery, stock, etc., being brought in for study and examination, regardless of weather conditions.

CLASS-ROOMS

The lecture rooms, laboratories and greenhouses of the College are offered freely for the use of short-course students, as guests of the College and the regular student body.

LIBRARY AND READING-ROOM

The College library is open daily, and students are encouraged to consult books bearing upon their subjects of study. The privileges of the College reading-room are also extended to them.

DAIRY BARNS

A complete set of dairy barns, housing a fine herd of pure-bred Ayrshires and Guernseys, demonstrates the latest methods of dairy management. Especial attention is invited to the valuable features of the Open Dairy Barn, original with our Experiment Station.

ACCOMMODATIONS AND COST

Instruction is free. Board may be had in College Park, or in the adjoining trolley-connected towns of Hyattsville, Riverdale or Berwyn, at about $5.00 a week for board and lodging. All persons planning to attend these courses should write us promptly, so that proper accommodations can be secured.

Address all enquiries for detailed programs and other information desired regarding the Short Courses to

H. J. PATTERSON, President,
Maryland Agricultural College.

College Park, Md.

Soils and Manures

JANUARY 4 to JANUARY 9

W. T. L. Taliaferro
Grover Kinzy

THIS course deals with soils, their properties, and how to care for them and make them more productive and fertile. Their relation to water, air, and heat; their adaptation to various crops; their need for drainage; crop rotation, the proper application of manure, fertilizers, and lime are all discussed.

Thorough Soil Preparation.

The presence of bacteria in soils is given attention from the standpoint of soil building. Their relations to the decomposition of organic matter, to the fertility of the soil, to leguminous plants, and to the rotting of manure are explained. In this connection a well equipped soils laboratory gives the student an excellent opportunity to study the physical properties of the different kinds of soils.

Instruction is given in the home mixing of fertilizers for best results. Every effort is made to direct the student toward ways and means of enriching his soil economically, and managing it to produce profitable crops while improving it.

Farm Crops

JANUARY 11 to JANUARY 16

W. T. L. Taliaferro
Grover Kinzy

Special Lecturer:
Nickolas Schmitz, Maryland Experiment Station.

FARM crops suited to Maryland conditions, their classification, adaptation to soil and climate, and various methods of culture form the subject matter of this course.

Their relations to the elements contained in the air and soil are dicussed. Explanation is given of how a plant feeds, and of the food products it yields. Questions like, "What is my land good for?" "What can it best produce?" are asked and anwered as correctly as possible.

Cutting Sudan Grass.

Attention is given to seed selection, the judging of grains, and the planting of improved varieties. Special lectures are devoted to corn, wheat, oats, alfalfa, clovers and forage crops. The preparation of land for these crops; their cultivation and harvesting, with a view to economical production and the saving of labor waste are taken up thoroughly.

Weeds, their nature and how to get rid of them; insects and diseases affecting farm crops are included. After many years' experience, the farmer may have learned already much of what is taught in this course, but he is sure to find out many things that he does not know, and which he cannot afford to waste time in discovering for himself.

Domestic Science

JANUARY 11 to JANUARY 16.

THE Domestic Science Courses given in previous years have been highly successful in the interest aroused among the women of the State, in the high grade of instruction given, and in the appreciative and ready spirit in which this instruction has been received.

INSTRUCTORS

Mrs. E. P. Foulk, Professor of Home Economics, Ohio State University; Dr. Martha B. Lyon, Washington, D. C.; Dr. C. O. Appleman, Maryland Agricultural Experiment Station; Miss Emma S. Jacobs, Director of Domestic Science in the Washington Public Schools, and many others, have been engaged for lectures and practical demonstrations in all branches of housework and home-making.

SUBJECTS OF STUDY

The Household—The Care of Babies, Bacteriology, Household Chemistry, Home Nursing, Bandaging, Ventilation, Cleaning, the Disposal of Waste, House Furnishing.

A Future Homemaker.

The Kitchen—Selecting Meats and Vegetables, Food Values, Care of Milk, Planning Meals, Cutting up Meats, Cooking, Canning of Fruits and Vegetables and the Fireless Cooker.

Clothing—Fibres and Textiles, Sewing and Dress Planning.

Visits will be made to the College Buildings, where we hope to educate your boys and, in the near future, your girls in better farming and home-making; to the Experiment Station and Poultry Plant, where we are engaged in discovering better methods and demonstrating them to our people, and to the Dairy Barns, where we are learning and teaching how to produce the purest of milk for the babies of Maryland, both of country and city.

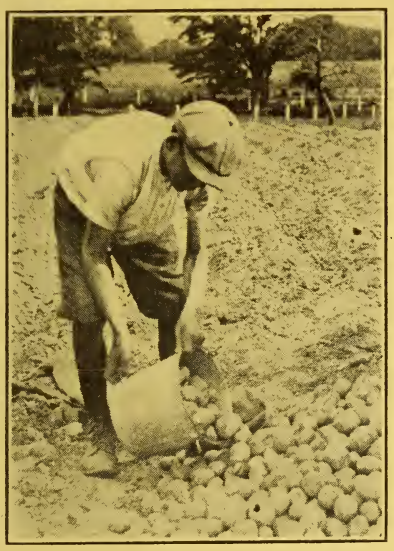
Note: The College 'bus will each morning meet the 9.00 o'clock trolley from Washington and the 9.10 o'clock trolley from Laurel. In the afternoon the 'bus will carry passengers from the College to meet the 5.10 and 5.30 trolley cars.

The Wide-Awake Country Boy

HOW SHALL HIS NEIGHBORHOOD HOLD HIM?

YOUR country boy isn't born asleep. He grows up noticing things. About the first is the road that leads *from* his father's gate. That road stands for life—for things moving and getting somewhere. On what comes up that road *to* the farm depends the boy's future.

Many a morning he trudges over this road on his way to school, swinging his books and dinner pail. He is supposed to be learning things at school. He learns a lot more on the way. He knows when Neighbor Higgins buys a new cow and whether or not she is a good one. He sees Neighbor Jones out in the slush and snow still shucking his corn when it ought to have been under cover long ago, and he knows it is wrong.



The Boy Partner.

Teams pass him on the road with loads of wheat and hay. He sees them come back loaded with lime and fertilizer and feed. When the road is good, he notices that they haul big loads. When it is bad, he sees that the loads they haul are smaller, that the horses are often overworked, and that his father and other farmers get mighty little for their trouble and worry. Do you wonder that often the boy does not linger—that he soon goes where roads are smoother and travelling pleasanter?

How are we to hold him? The answer is, perhaps, not so difficult. Ask yourself the question, "What holds me, his father, to country life?" And you will answer, "Being able to own and run my own business, having friends, getting decent returns for my labor, having a genuine liking for country life." The same things hold true for your boy. Let him have them! No, not all at once, today, tomorrow, or when he is twenty-one, but gradually, every day, as things that he must *grow into liking and having.*

His Queen in Calico.

Let him own something. Let him *earn* while he is doing his chores. Give him for what he does a calf or a pig, a little piece of land for corn or potatoes, or maybe a few strawberry plants. Let him keep them and make what he can from them, as his very own, no matter how valuable they may become. A chicken that he can keep the money for after it is sold will be worth far more to him than the heifer he loved and petted and then let you sell and for which you pocketed the price.

Neither is it enough just to give the boy something of his own to care for. Take him into partnership with you. Be interested in what he is doing, and interest him in what you are doing. Make him feel that the farm business is his business as well as yours, and that there is nothing better he can look forward to than being as good a farmer and citizen as yourself and possibly a better one.

You have friends. You meet and exchange views with your neighbors. You, perhaps, belong to a grange or farmers' club. Give the boy the same chance from the time he is twelve until his "sparkin' days" begin. A neighborhood club for country boys will provide for this need, but you should have belonged to such a club in order to value it properly. It will make all the difference in the world with your boy. It will bring him and the other boys who will some day be his fellow citizens and farmers *together*. They will talk over the things that interest them. They will have wholesome fun together. They will learn to trust each other and to co-operate for their common good. And they will come away from their meetings supremely satisfied with their life, their outlook, and their neighborhood. What will it cost you? The loan of a horse and buggy once or twice a month. And once a year your house will be livened with the noise and clatter of a healthy crowd of boys, that, with the joy of being together, a few cookies

A Start With Tomatoes.

and lemonade will make perfectly happy! Is it worth it? That, and giving them a chance at a better agricultural education than you had, by sending them either through an agricultural high school, or to a Short Course at your Agricultural College? Perhaps you are afraid your boy will get to know too much? No danger of that! No one ever knew too much about *his* way of living. And keeping your boy in the home neighborhood, where he is wanted and needed, depends on giving him the chance to get that lasting interest in its life and future that these things will give him. Are you going to hold the boy for your neighborhood?

Getting a Live Interest.

Poultry Husbandry

JANUARY 18 to 23
Roy H. Waite

THIS course is designed for the busy poultry keeper now engaged in the business, the beginner, and those who are thinking of taking up chicken raising. It is very obvious that we cannot make finished poultry raisers from novices in the short period of one week, but past experience has shown that those in the above mentioned classes can be greatly benefited. In fact, the object of the course is not so much to develop poultrymen who can go out and run a poultry plant from the start, but to get the student to thinking for himself.

The poultry keeper who has time and inclination for taking the course will be amply repaid by a review of the subject. New facts of interest will come up, and he will be mingling with an enthusiastic "chicken crowd."

War in the Poultry Yard.

The beginner cannot help but reap a rich harvest of information that will save him hundreds of dollars that might otherwise be wasted in mistakes or needless experiments to learn facts that are already well known and established.

The course is of especial value to the victim of "chicken fever," who is undecided as to whether or not to enter the field of poultry production. Many persons start in with very erroneous ideas as to the amount of attention required and the profits expected. They are misled by the great stories of success in the business so often told.

Full details of the subjects for discussion and demonstration, together with the special list of poultrymen engaged as teachers, will be found in the poultry course folder, to be had for the asking by all persons interested.

Horticulture

JANUARY 25 to FEBRUARY 6

T. B. Symons

Assistants:

H. Beckenstrater, E. N. Cory, B. W. Anspon, R. C. Rose

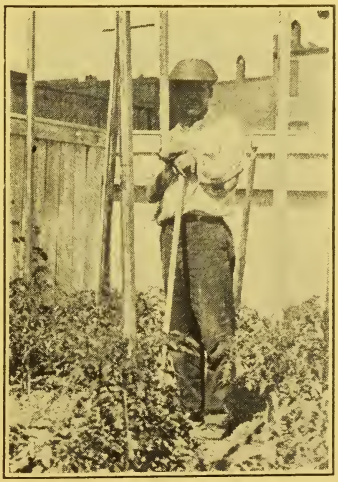
A Promising Young Seedling.

THE aim of the two-weeks' course in horticulture is to discuss and demonstrate the most practical methods of meeting successfully the various problems which confront the fruit grower, the vegetable gardener, and the owner of the home acre.

Orcharding—Lectures are given on fruit varieties adapted to Maryland's soil, climate and markets, the selection and planting of young trees, the cultivation and feeding of the growing orchard, the protection of both the trees and their fruit against insects, pests and diseases. Special talks are given by practical authorities on apples, pears, peaches, plums, cherries and bush fruits. Their picking, packing and methods of marketing are given much attention, as being quite as important as their successful production.

Vegetable Gardening—The second week is largely occupied with seed selection, and the preparation of the seed bed for vegetables. The truck crops, such as potatoes, sweet corn, tomatoes, peas, cabbage, etc., are treated separately by experienced growers.

Demonstrations are a strong feature of this course. Much time is given to the illustration



A City Gardener.

(PAGE ELEVEN)

of methods of budding, grafting and pruning; of spraying and the preparation of insecticides and fungicides; of the grading and packing of fruit; cold-frame and hotbed construction are also taken up.

The Home Acre—Its needs and possibilities in cutting down the living expenses of both farmer and suburbanite are given especial consideration. The home orchard and garden should be given the first attention over any other part of the farm. The home surroundings should be made beautiful and attractive. Not only should the home acre be developed on every farm, but wherever there is a house and a piece of ground there should be a garden and fruit trees. In the "backyard farms" of the outlying districts and suburbs of our towns and cities lies great hope for better living conditions, and healthier and happier children.

Class in Pruning, Short Course, 1914.

Farm Live-Stock

FEBRUARY 8 to FEBRUARY 20

R. H. Ruffner

S. S. Buckley, Veterinarian

Assistants in Sheep and Swine:

C. L. Opperman, R. S. Allen, Reuben Brigham

Breeding for Better Workers.

The course in farm live-stock is especially planned for those who wish to raise superior live-stock with economy and success. The best farming requires the keeping of farm animals, and the amount of profit obtained is directly proportionate to the number of animals kept and the degree of attention they are given. We believe, therefore, that every legitimate means of encouragement should be brought to bear upon the Maryland farmer in making Maryland a State noted for her live-stock interests, and the breeding of her own high-class strains of farm animals.

With this end in mind, we offer as a part of this course the study of breeds, the judging of horses and cattle for soundness, condition and type. and the general principles of live stock breeding.

Thousands of dollars are spent by Maryland farmers each year in the unnecessary purchase of expensive feeds. Special emphasis is laid on the economical and rational feeding of all farm animals. Instruction is given in working out balanced rations from feeds available on individual farms and in different localities.

A Well-Bred Sire.

A Happy Family.

We endeavor to teach each student how to buy a good feeder. Fat cattle, hogs and lambs will be slaughtered for market in our large demonstration room. The more profitable marketing of fattened stock and the selection and handling of meats for home and neighborhood consumption will be touched upon.

The hot-house lamb industry, its present standing and possibilities for development in many sections of Maryland, will be featured. To this end the services of two experienced growers of winter lambs have been secured, and their experience should prove most interesting to prospective sheep owners.

Students will have an opportunity to inspect the anti-hog cholera serum plant at the Experiment Station. A demonstration of the serum treatment will be included in the work of the course.

Lambs on Early Pasture.

Dairying

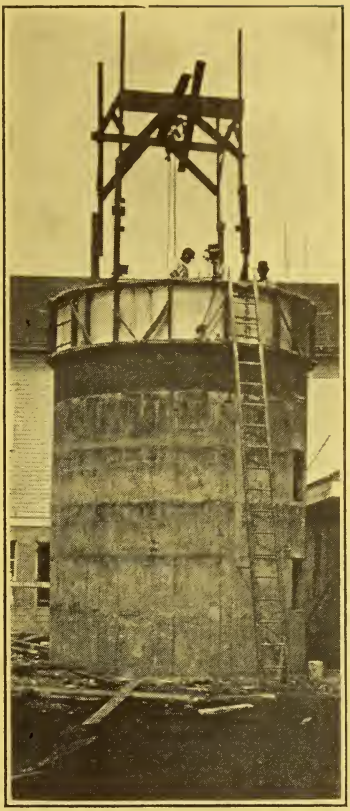
FEBRUARY 20 to FEBRUARY 27

R. H. Ruffner
S. S. Buckley, Veterinarian

Experiment Station Assistant:
G. E. Wolcott, Dairy Extension

THE dairy industry in Maryland is of much greater magnitude than is apparent to the average observer. The most reliable figures available at the present time place the total number of dairy cows in Maryland at 166,859, with a farm value of more than $6,000,000. This represents more investment than all the meat cattle of the State, together with its hogs and sheep. It is an industry that tends to intensify farming methods. It is one of the factors which enters most strongly into the great question of conserving soil fertility.

There are two directions in which much improvement can be made, namely, in raising the annual production of our cows and in improving the quality of our dairy products. The first is the more important. Could the annual product of the Maryland cow be advanced a few pounds of milk or butter per year, it would bring greatly increased returns to our producers.



Silo Building.

Certain sections of Maryland are well fitted for dairying, and in such localities the industry should be encouraged as much as possible.

During the brief time allowed for dairy instruction, the following subjects will be discussed: the judging of dairy cows, dairy breeds and types co-operative breeding and testing, the building of silos, feeding for economic production, types of dairy barns, dairy sanitation, effects of dairying on the soil. Excursions will be made to the Government Breeding Farm, at Beltsville, and to the Soldiers' Home Dairy, Washington, D. C.

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UNIVERSITY OF ILL

Farm Machinery and Engines

MARCH 1 to MARCH 6

W. T. L. Taliaferro
Grover Kinzy

THE study of farm machinery and motors in this course is intended to familiarize the student with the construction and use of various implements and machines required in meeting modern farm conditions and in solving the labor problem. The gasoline engine and its adaptability to a wide variety of service will be thoroughly demonstrated.

Carpentry, Blacksmithing, Pipe-fitting

MARCH 8 to MARCH 13

Harry Gwinner, H. L. Crisp

This is a most valuable course for the average farmer. He can save much by sharpening and fitting his own tools, and by knowing when this work has been done properly.

Carpentry—A handy thing for the farmer to have is the ability to plan and construct his sheds, outbuildings, and the many appliances about the farm that need to be kept in repair.

Forging—A small forge, and the knowledge necessary to do some of his own iron work at odd times, such as making open links, chain welds or temporary machine repairs is often worth a great deal. Many a farmer in one of his rush seasons has had to lose three or four hours of the best part of his working-day in making a hurried trip to the nearest blacksmith shop, wasting both time and money.

Pipe-fitting—Knowing how to lay pipe and make sound connections is something that every enterprising farmer will find of use in supplying the house, barns and garden with water.

Cutting Fodder.

A STRONG AGRICULTURAL COLLEGE.

A PROFITABLE STATE INVESTMENT.

"A strong and active *agricultural college* is the *backbone* of any State. Other institutions may be called its brain or its heart, but that which stands for farming is its backbone. All wealth comes out of the ground. The last resort of society is in the soil, and that resort should be properly fitted for its occupants. The Agricultural College tells farmers how to make $30 land pay interest on $150 valuation. No other institution in the State does this with any Maryland property. The College also develops the man as well as the soil, and the best citizen is the small or medium-sized freeholder. As a matter of *plain business,* the College should be liberally equipped and supported. There can be no wiser State policy."—H. W. Collingwood, Editor, *The Rural New Yorker.*

"Be It Resolved, That the members of the Short Course Class of 1914, Maryland Agricultural College, desire to express individually and as a class, their earnest appreciation of the Short Courses which the College has made available to them, as well as the practical value of the same to them as farmers."—From resolutions unanimously passed January 23rd, 1914.

"WHAT CHANCE WITHOUT THE PLANK?"

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1916

VOL. 12. SEPTEMBER, 1915. NO. 7

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JAN 8 1931

The Maryland Agricultural College Bulletin

ANNOUNCEMENT

SHORT COURSES, 1916

Soils and Fertilizers	January 3-8.
Farm Crops	January 10-15.
Domestic Science	January 10-15.
Road Building and Maintenance	January 10-15.
Poultry Husbandry	January 17-22.
Horticulture	Jan. 24-Feb. 5.
Animal Husbandry	February 7-26.
Farm Machinery and Farm Engines	Feb. 28-Mar. 4.
Farm Carpentry and Blacksmithing	March 6-11.

JANUARY 3RD TO MARCH 11TH, 1916.

Issued monthly excepting the months of November, December, January and February. Entered at College Park, Md., as Second-Class Matter under Act of August 24, 1912.

MARYLAND'S POSSIBILITIES

The net return from her 50,000 farms should be doubled.

Her two millions of acres of uncultivated and swamp land could be increased in value tenfold.

Her average yield of corn could be increased two barrels per acre, and this would give to the farmers nearly four million dollars more per year.

One pint more milk per cow per day would give the dairymen over one million dollars more for their labor each year.

Unused hill land could be turned into pastures that would feed at least a half million sheep.

Maryland can be made the greatest fruit State in the East. Land suitable for orchard fruits that now sells for $10 to $30 per acre can be made worth $150 to $300 per acre.

OTHER CROPS CAN BE DEVELOPED PROPORTIONALLY

Maryland's soil, climate and location are exceptionally well fitted for growing food for man. She has ten million consumers in the cities and towns located at her doors.

NO STATE IN THE UNION HAS AS GOOD MARKETS

The consumers should pay less for food and the producers get more for their products than at present. Cooperation between buyer and seller will make this possible.

More profit in farming will attract settlers and increase land values.

The water-power that is going to waste on thousands of Maryland farms should be harnessed and made to lighten and do much of the farm labor.

Maryland should rank first as a state of prosperous farms and pleasant homes.

Her 200,000 growing boys and girls are entitled to as good educational facilities as other States provide for their children. They should be trained to make the most of these possibilities.

The first-class equipment of your Agricultural College for education, investigation and the demonstration of these possibilities would be the greatest factor the State could have for bringing about these desired results.

LET US HAVE A GREATER STATE THROUGH A GREATER AGRICULTURE, AND A GREATER AGRICULTURE THROUGH A GREATER AGRICULTURAL COLLEGE.

WINTER SHORT COURSES

SLOWLY, yet surely, the citizens of the rural communities are realizing the inestimable value of instruction in the arts and sciences of agriculture and allied subjects. The tillers of soil, as a class, until a few years ago, felt that their knowledge of soil, crops and animals was sufficient, and they resented the efforts made to secure changes in their system of farming.

A transition has been in progress, and today the farmer is looking to those agencies such as the state agricultural colleges, experiment stations and the Federal Department of Agriculture, for help in making farming more profitable. Such aid deals both with the production and distribution of products.

The agricultural colleges are active in attempts to satisfy the demands, and the scope of their activities is exerted beyond the instruction in the regular college courses.

It is the function of the experiment stations to conduct investigations in all branches of agriculture. The colleges use the results of the experiment station investigations as a basis for their teachings, while their extension service carries directly to the farm the results of the experiment station investigations.

For those persons who cannot attend the regular four-year and two-year courses, but who can leave the farm for a few weeks during the winter season, the Maryland Agricultural College provides a series of short courses which are held each year during the first ten weeks after January first.

The women of the farm are not being neglected. They are admitted to all of the courses. A course in domestic science has been prepared especially for them, and has proved very popular.

There is no charge for instruction in these courses, and the cost of board and lodging is very reasonable. A statement of this expense and other items of general information will be found on back cover page.

The teaching staff of the College will be augmented by specialists from the Experiment Station, U. S. Department of Agriculture, the Extension Service of the College and experts from Maryland and other States who have made pronounced success in their specialties.

Programmes giving detailed information as to dates, subjects and lecturers for these courses will be forwarded upon request.

Soils and Fertilizers

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JANUARY 3 to JANUARY 8

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W. T. L. TALIAFERRO, *in charge*

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THIS course deals with soils, their properties, and how to care for them and make them more productive and fertile. Their relation to water, air, and heat; their adaptation to various crops; their need for drainage; crop rotation, the proper application of manure, fertilizers, and lime are all discussed.

7 Acre Field of Mixed Hay Yields 4.76 Tons Per Acre
1st Cutting—July 9, 1915.....50145 lbs.
2nd Cutting—Sept. 7, 1915.....16520 lbs.

Total.....66665 lbs.

The presence of bacteria in soils is given attention from the standpoint of soil building. Their relations to the decomposition of organic matter, to the fertility of the soil, to leguminous plants, and to the rotting of manure are explained. In this connection a well-equipped soils laboratory gives the student an excellent opportunity to study the physical properties of the different kinds of soils.

Instruction is given in the home mixing of fertilizers for best results. Every effort is made to direct the student toward ways and means of enriching his soil economically, and managing it to produce profitable crops while improving it.

Farm Crops

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JANUARY 10 to JANUARY 15

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W. T. L. TALIAFERRO, *in charge*

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FARM crops suited to Maryland conditions, their classification, adaptation to soil and climate and various methods of culture form the subject matter of this course.

Their relations to the elements contained in the air and soil are discussed. Explanation is given of how a plant feeds, and of the food products it yields. Questions like, "What is my land good for?" "What can it best produce?" are asked and answered as correctly as possible.

Ensilage Corn Grown at Experiment Station.

Attention is given to seed selection, the judging of grains, and the planting of improved varieties. Special lectures are devoted to corn, wheat, oats, alfalfa, clovers and forage crops. The preparation of land for these crops; their cultivation and harvesting, with a view to economical production and the saving of labor waste, are taken up thoroughly.

Weeds, their nature, and how to get rid of them; insects and diseases affecting farm crops, are included. After many years' experience, the farmer may have learned already much of what is taught in this course, but he is sure to find out many things that he does not know, and which he cannot afford to waste time in discovering for himself.

Domestic Science

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JANUARY 10 to JANUARY 15

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K. A. PRITCHETT, *in charge*

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THE Domestic Science Courses given in previous years have been highly successful in the interest aroused among the women of the State, in the high grade of instruction given, and in the appreciative and ready spirit in which this instruction has been received.

INSTRUCTORS

Katharine A. Pritchett, Columbia University, State Agent, Home Demonstration Work; Florence J. Hunt, Illinois University, Assistant State Agent, Home Demonstration Work; Helen L. Comstock, Cornell University, and others, will lecture and give demonstrations in all branches of home economic work.

SUBJECTS OF STUDY

Home Management—Study of the Family Life, Labor-Saving Devices, Laundry, Chemistry of Household Reagents, Value of Economy of Time and Energy, Sanitation, Home Nursing, Care of the Infant, House Planning, Interior Decoration.

These Amounts Represent 100 Calories.

	oz.		oz.		oz.
Bread	1.38	Onion	8.03	Orange	9.45
Butter	.46	Celery	23.67	Banana	5.51
Milk	5.10	Carrots	10.08	Cabbage	13.26
Eggs	2.69	Pear	6.25	Veal	3.42
Apple	7.49	Beets	5.56	Parsnips	6.78

Food—Preservation of Foods, Food Principles and Food Values, Nutrition, Menu Planning, Food Preparation, Study of the Cost of Menu per day, per capita, Infant Feeding, Table Service.

Clothing—Textile Chemistry, Simple Sewing, Adaptation of Commercial Pattern to Figure, Design.

NOTE:—The College 'bus will each morning meet the 9.00 o'clock trolley from Washington and the 9.10 o'clock trolley from Laurel. In the afternoon the 'bus will carry passengers from the College to meet the 5.10 and 5.30 trolley cars.

Road Building and Maintenance

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JANUARY 10 to 15

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T. H. TALIAFERRO, *in charge*

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THE object of the course in Road Building and Maintenance is to offer an opportunity for road engineers, supervisors, inspectors, foremen and other interested persons to receive instruction in the improvement and maintenance of roads, to discuss with specialists the best methods of carrying on the road work and to confer with each other concerning the road problems of Maryland.

Special emphasis will be laid upon the improvement and maintenance of the ordinary country or earth roads, as a very large proportion of the roads are of this type at the present time, and must remain so for many years to come.

The rural as well as the urban community must realize that the improved road is essential to the advancement of the private and public interest.

Ample time will be set apart for a full and free discussion of each and every subject considered in the course, with the hope that every advantage will be taken of the opportunity thus afforded.

The services of a number of specialists have been secured to talk on the different subjects embraced in this very important course.

Road Improvement.

Poultry Husbandry

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JANUARY 17 to 22

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ROY H. WAITE, *in charge*

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THIS course is designed for the busy poultry keeper now engaged in the business, the beginner, and those who are thinking of taking up chicken raising. It is very obvious that we cannot make finished poultry raisers from novices in the short period of one week, but past experience has shown that persons in the classes mentioned above can be greatly benefited. In fact, the object of the course is not so much to develop poultrymen who can go out and operate poultry plants from the start, but to get the students to thinking for themselves.

Even the experienced poultry keeper who has time and inclination for

Poultry Office Building.

taking the course will be amply repaid by a review of the subject. New facts of interest will come up, and he will be mingling with an enthusiastic "chicken crowd."

The beginner cannot help but reap a rich harvest of information that will save him hundreds of dollars that might otherwise be wasted in mistakes or needless experiments to learn facts that are already well known and established.

The course is of especial value to the victim of "chicken fever," who is undecided as to whether or not to enter the field of poultry production. Many persons start in with very erroneous ideas as to the amount of attention required and the profits to be expected. They are misled by the great stories of success in the business so often told.

Horticulture

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JANUARY 24 to FEBRUARY 5

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S. B. SHAW, *in charge*

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A Well-Shaped Tree.

THE two-weeks' course in Horticulture is given for the discussion and demonstration of practical methods of meeting successfully the various problems which arise in the production of orchard crops, small fruits and truck crops. Landscape work and gardening, as related to the home, are also features of this course.

Orcharding—Lectures are given on location as regards soil, climatic and market conditions; the selection of suitable varieties for commercial and home purposes; the planting and pruning of trees; cultivation and feeding of orchards; orchard implements; the control of insects and diseases; harvesting and packing of fruit, and the general problems of marketing as applied to fruit growing Special lectures will be given by practical authorities on various fruits.

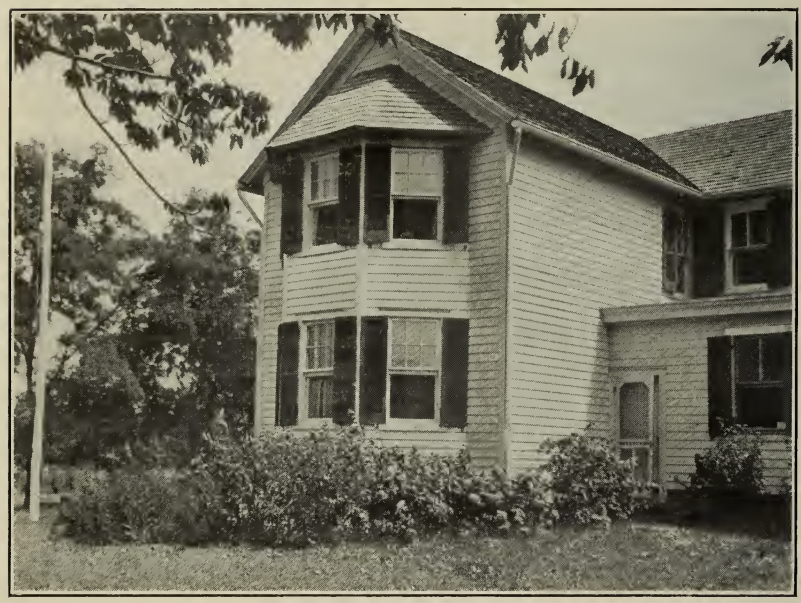
Small Fruits—The time devoted to this branch of Horticulture will be taken up in discussing the production of such fruits as strawberries, grapes, currants, gooseberries, raspberries and blackberries. Planting, cultivation and training will be discussed in detail.

Market Gardening—Vegetable growing from the standpoint of the market gardener and trucker will be discussed in detail. Lectures will be given on the selection of seed; methods of planting; implements, cultivation and fertiliza-

Spraying Demonstration.

tion, harvesting and marketing. Such crops as potatoes, sweet corn, tomatoes, peas, cabbage, canteloupes, etc., will be treated separately by experienced growers.

Landscape Gardening—In view of the fact that attractive surroundings play such an important part in the home life, lectures pertaining to the principles underlying this art will be given. The relation of the house to the grounds, and the proper method of embellishing the same will be treated. Flowers and their use in the home flower garden will be given due consideration. The propagation and care of the common ornamentals suitable to planting in the home grounds will be discussed by illustrated lectures and demonstrations.



Attractive Home Grounds.

Demonstrations—These will be a strong feature of this course. Methods of propagation of both tree and bush fruits will be shown. The pruning and training of old and young trees, berry bushes and grape vines will be done in a practical way. Planting of seed, making of cuttings, transplanting of seedlings, potting of plants and the construction of hotbeds and cold-frames will be a part of the course in Market Gardening and in Landscape Gardening. Preparation of insecticides and fungicides, and the spraying of fruit trees will be demonstrated in detail. Classes will also have an opportunity to grade and pack fruit. The idea of the demonstration work is to give a practical working knowledge of as many as possible of the subjects under discussion.

Farm Live Stock

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FEBRUARY 7 to FEBRUARY 19

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R. H. RUFFNER, *in charge*

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Grade Percherons.

THE course in farm live stock is especially planned for those who wish to raise superior live stock with economy and success. The best farming requires the keeping of farm animals, and the amount of profit obtained is directly proportionate to the number of animals kept and the degree of attention they are given. We believe, therefore, that every legitimate means of encouragement should be brought to bear upon the Maryland farmer in making Maryland a State noted for her live stock interests, and the breeding of her own high-class strains of farm animals.

With this end in mind, we offer as a part of this course the study of breeds, the judging of horses and cattle for soundness, condition and type, and the general principles of live stock breeding.

Thousands of dollars are spent by Maryland farmers each year in the unnecessary purchase of expensive feeds. Special emphasis is laid on the economical and rational feeding of all farm animals. Instruction is given in working out balanced rations from feeds available on individual farms and in different localities.

We endeavor to teach each student how to buy a good feeder. Fat cattle, hogs and lambs will be slaughtered for market in our large demonstration

Mules of Good Type.

room. The more profitable marketing of fattened stock and the selection and handling of meats for home and neighborhood consumption will be touched upon.

The hothouse lamb industry, its present standing and possibilities for development in many sections of Maryland, will be featured. To this end the services of two experienced growers of winter lambs have been secured, and their experience should prove most interesting to prospective sheep owners.

Students will have an opportunity to inspect the hog anti-cholera serum plant at the Experiment Station. A demonstration of the serum treatment will be included in the work of the course.

Ready to Top the Market.

Dairying

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FEBRUARY 21 to FEBRUARY 26

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R. H. RUFFNER, *in charge*

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THE dairy industry in Maryland is of much greater magnitude than is apparent to the average observer. The most reliable figures available at the present time place the total number of dairy cows in Maryland at 166,859, with a farm value of more than $6,000,000. This represents more investment than all the meat cattle of the State, together with its hogs and sheep. It is an industry that tends to intensify farming methods. It is one of the factors which enters most strongly into the great question of conserving soil fertility.

Harford County Dairy Herd.

There are two directions in which much improvement can be made, namely, in raising the annual production of our cows, and in improving the quality of our dairy products. The first is the more important. Could the annual product of the Maryland cow be advanced a few pounds of milk or butter per year, it would bring greatly increased returns to our producers.

Certain sections of Maryland are well fitted for dairying, and in such localities the industry should be encouraged as much as possible.

During the brief time allowed for dairy instruction, the following subjects will be discussed: the judging of dairy cows, dairy breeds and types, cooperative breeding and testing, the building of silos, feeding for economic production, types of dairy barns, dairy sanitation, effects of dairying on the soil. Excursions will be made to the Government Breeding Farm, at Beltsville, and to the Soldiers' Home Dairy, Washington, District of Columbia.

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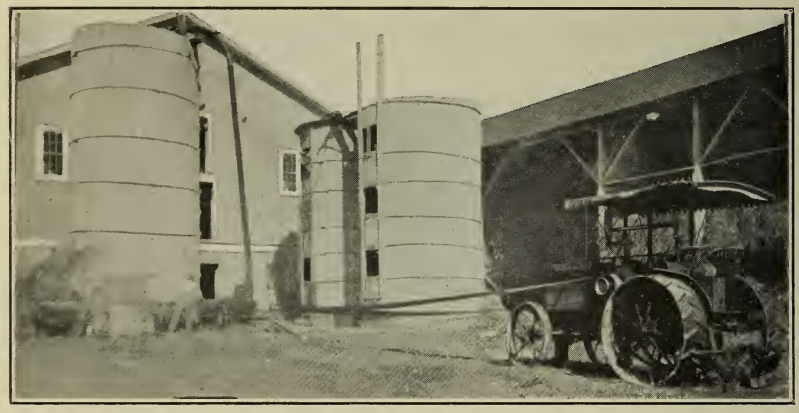
Farm Machinery and Engines

FEBRUARY 28 to MARCH 4

W. T. L. TALIAFERRO, *in charge*

THE study of farm machinery and motors in this course is intended to familiarize the student with the construction and use of various implements and machines required in meeting modern farm conditions and in solving the labor problem. The gasoline engine and its adaptability to a wide variety of service will be thoroughly demonstrated.



Gasoline Tractor and Ensilage Cutter.

Carpentry, Blacksmithing, Pipe-Fitting

MARCH 6 to MARCH 11

HARRY GWINNER, *in charge*

This is a most valuable course for the average farmer. He can save much by sharpening and fitting his own tools, and by knowing when this work has been done properly.

Carpentry—A handy thing for the farmer to have is the ability to plan and construct his sheds, outbuildings, and the many appliances about the farm that need to be kept in repair.

Forging—A small forge, and the knowledge necessary to do some of his own iron work at odd times, such as making open links, chain welds or temporary machine repairs is often worth a great deal. Many a farmer in one of his rush seasons has had to lose three or four hours of the best part of his working-day in making a hurried trip to the nearest blacksmith shop, wasting both time and money.

Pipe-fitting—Knowing how to lay pipe and make sound connections is something that every enterprising farmer will find of use in supplying the house, barns and garden with water.

CORRESPONDENCE COURSES IN AGRICULTURE AND HOME ECONOMICS

FOR WHOM INTENDED.

There are a large number of persons who wish to engage in agriculture, who have not been trained for it, and cannot attend an agricultural college. There are also many farmers desirous of making a systematic study of some particular line of agriculture, and many farm women who want to study homemaking, but they cannot leave home to do so. To meet the needs of those who must study at home, the Extension Service of the Maryland Agricultural College has established a Correspondence Study Department.

TEACHING BY MAIL IS PRACTICAL

Instruction by mail is not a new thing. This phase of extension work is recognized as an efficient means of giving valuable information and directing systematic study. Its possibilities are unlimited. Many of the agricultural colleges of the United States are conducting correspondence study, and satisfactory results are being obtained. For the ambitious person who cannot leave the farm or home to attend the regular four- or two-year courses, or the winter short courses at the State College, and who desires to utilize the evening hours in acquiring a better knowledge of agriculture and home economics, the correspondence courses present the opportunity sought.

COURSES PREPARED BY SPECIALISTS

The lessons written on each subject have been prepared by specialists of the College and Experiment Station. Technical terms have been excluded as much as possible and the matter presented in a clear, yet concise manner. The information contained in the lessons will be the latest available, and will be made especially applicable to Maryland conditions.

For descriptive bulletin address, Secretary, Correspondence Study Department, College Park, Md.

General Information

LOCATION AND CONNECTIONS

The Maryland Agricultural College is located at College Park, on the Baltimore and Ohio Railroad, between Baltimore and Washington, forty minutes by trolley from the United States Department of Agriculture, the Congressional Library, and the Government Experiment Farms.

SHORT-COURSE HEADQUARTERS

Adjoining the College grounds are the Agricultural Experiment Station and Farm. Here, in the Biological Laboratory Building, are located the headquarters for the Short Courses, the main lecture hall, and a demonstration room for killing, dressing, packing, etc. These rooms are floored with cement, and are commodious enough to allow of machinery, stock, etc., being brought in for study and examination, regardless of weather conditions.

CLASS-ROOMS

The lecture rooms, laboratories and greenhouses of the College are offered freely for the use of short-course students, as guests of the College and the regular student body.

LIBRARY AND READING-ROOM

The College library is open daily, and students are encouraged to consult books bearing upon their subjects of study. The privileges of the College reading-room are also extended to them.

DAIRY BARNS

A set of dairy barns, housing a herd of pure-bred Ayrshires and Guernseys, demonstrates practical methods of dairy management. Especial attention is invited to the valuable features of the Open Dairy Barn, original with our Experiment Station.

ACCOMMODATIONS AND COST

Instruction is free. Board may be had in College Park, or in the adjoining trolley-connected towns of Hyattsville, Riverdale or Berwyn, at about $5.00 a week for board and lodging. All persons planning to attend these courses should write us promptly, so that proper accommodations can be secured.

Address all enquiries for detailed programs and other information desired regarding the Short Courses to

H. J. PATTERSON, President,
College Park, Md. **Maryland Agricultural College.**

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